SCOTTISH HOSPITALS INQUIRY

Hearings Commencing
13 May 2025

Day 5
20 May 2025
Darren Pike

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THE CHAIR: Now, Mr Pike?

MR MACKINTOSH: Yes, Mr Pike, please, my Lord.

THE CHAIR: (After a pause) Good afternoon, Mr Pike. Now, you have, of course, been here before, in February of last year, if I recollect, giving evidence in relation to the Edinburgh Hospital.

THE WITNESS: Yes.

THE CHAIR: So, you'll understand what's about to happen, which is that Mr Mackintosh will ask you some questions, but, first of all, you've agreed to affirm.

Mr Darren Pike

Affirmed

Thank you, Mr Pike. Now, we've scheduled the afternoon for your evidence, but should you wish to take a break at any time, just give me an indication and we can take a break. Now, Mr Mackintosh.

MR MACKINTOSH: Thank you, my Lord.

Questioned by Mr Mackintosh

Q Mr Pike, I wonder if you can give us your full name?

A Darren Michael Pike.

Q Have you produced a further statement in response to our questionnaire?

A I have, yes.

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

A Yes.

Q Thank you. Now, you obviously gave a previous statement, you gave evidence about Edinburgh, and I'll have a question for you about that at the end, but I want to focus on the Glasgow Hospital. You mention in your statement on the page 83 that you joined Multiplex in 2010 as an M&E manager. I take it that you joined the team at the new SGH at that point?

A That's right, yes.

Q Right. What was the state of play at the project in terms of M&E? What had been decided and what hadn't been decided when you arrived?

A So, I was initially involved, kind of, right across the project. So, there was a lab facility being built as one of the stages of the project. That was in its, kind of, final iteration of getting the design ready for construction. Then, there was a lot of enabling works and agreements with Scottish Power and Scottish Water in terms of main utilities for the main project, and some other, say, smaller enabling works, but it's such-- the likes of relocating substations for the existing A&E and things. So, that was the, kind of, initial prominent piece. The M&E design which I think we're interested in here was just in its formative stages out

the back of the bid and beginning to get into the Appendix K set of design series.

Q Right, I want to just take that and to break it down. So, there'd been a bid document with multiple volumes and a design related to that, yes?

A Yes.

Q And then there will be an appendix K which is produced targeting the full business case process?

A It was-- From my perspective, it was targeting the instruction to proceed on Stage 3, and I think the NHS had a full business case piece in and around that same time.

Q Now, you hadn't been involved at the stage of the original bid?

A No.

Q So, how does your job as an M&E manager fit into the work of the other players in the design process who might well be the architects, Nightingale Associates, and ZBP, the M&E consultants? How do you fit into that menagerie, as it were?

A So, I'll probably take it on a bit of a time scale. Initially, I didn't do a lot with ZBP, and that kind of grew as we went on. My boss at the time, Chris Lovejoy, was looking after ZBP in the first couple of months of me joining Multiplex until I got an understanding of the labs and got the labs into a place that the construction drawings could go, and then I kind of dovetailed over with Chris taking up more with ZBP. So, whilst ZBP worked closest with Nightingales and WSP, the other main design party, ultimately, ZBP would end up reporting through the M&E team into the wider Multiplex structure.

Q So, if we take the architectural process as sort of the spine for this, which it may be wrong, and if there's a better way to-- tell me at the end of this section, when you arrive in the summer or in the spring of 2010 and then you take a few months settle in, where are the architects in their design process? Where have they got to?

A So, they are doing user group meetings and beginning to formulate-- well, build on the 1:200 layouts, and I think in-- I'm not sure in 2010 if they were getting into 1:50s by the back end of 2010, and then ZBP would be picking up the out turn of those meetings and starting to detail their design up.

Q Now, we've heard a lot about ADB sheets and Room Data Sheets. Where do they sit in the process from your point of view?

A So, they kind of lead and end it, from my point of view, in terms of this phase of the project. So, the Room Data Sheets were collated through the user group meetings, I actually think, from-- probably initial set from the bid place, and I know you've heard from Emma and

she'll probably describe it better than I can, and they have both the furniture, the room types, the sizes, and M&E information on them, and they are effectively updated post user groups and then reiterated and issued again. So, they kind of run within the Appendix K and then within the RDD process in parallel.

Q The reviewable design process?

A Yeah, which is a little bit later, I'm sure you'll come on to that, but they kind of run in parallel to that. As the information comes available, they either get modified or left as they were to start with.

Q In their first iteration, if we focus on the environmental page only of a room data sheet-- it would probably be a good idea if we put it on the screen, it might make life a bit easier. I'll just pick out the right reference. So, if we go to bundle 47, volume 3, page 45. So, this, I understand, is a room data sheet for an isolation room in Ward 2A. It's a 2011 version. I appreciate it will have been changed, but we'll just use it as a sort of aide-mémoire for our conversation. If you think about the first version, obviously because this is Revision 3, but the first version of it, where would the data in it have come from? The M&E data?

A It would come from the designers based off of the performance specifications they think they're working to.

Q So, that's the employers' requirements and any parts of the contract that are relevant?

A Yeah. Yes.

Q Now, that's coming from the designers in terms of a Nightingale or the designers in terms of ZBP?

A That section-- So, Nightingales were responsible for producing this RDS, but ZBP would be feeding in the M&E information to it.

Q Of course, you would want to make sure that they fed in information that was consistent with the contractual obligations of Multiplex?

A I would, yeah.

Q Now, if we again narrow it down and focus on the ventilation section, we have, I think, seven rows: extract AC hour, supply AC hour – if we can zoom in at the top half of the page – mechanical ventilation notes, relative pressure, dust spot efficiency, arrestance, and filtration humidity notes, and general HVAC-- What's HVAC?

A Heat and ventilation and controls(sic). Now, two of those boxes are empty: extract and supply. Can you help us about why they're empty? Because they seem to be empty through pretty much every single room data sheet

we look at.

Yeah, I think I can, and this comes from-- I heard you'd seen a bit of a blank around what happened in 2010, so I went back to have a look there.

Q Right.

A And I believe that that information has been pulled off of an environmental matrix that ZBP were running to inform the design and their design, which was populated throughout 2010.

Q So, there's an environmental matrix, which we may not actually have seen now that I think about it, but we can check, which-- But that surely would have to have extract and supply air numbers?

A You would think so, but it-- I believe that that's been copied across from what's in the matrix.

Q Because if we happen to look at a different sort of room, just for completeness, I recognise this is much later on in the process, but if we go to bundle 47, volume 1, page 14. No, that's the wrong room to go to, let's not. Go back to the one we were on before please, which is 47 volume 3. I'm just going to take a moment to just find something. If we can go back to volume(sic) 47, volume 1, page 9, okay? Go back to the original bundle, 47, volume 3, page 45. I'll come back to that when I find the right one because I want to just keep the flow going, and then we have the mechanical ventilation notes for this isolation room, that's the third box. Would that have come from the matrix as well?

A I think so, yeah.

Q Now, from your point of view, of someone who's working to the contract, and I am focusing on isolation rooms, but actually, it's a good way of seeing method, where does this, what's root of this reference to "HBN 04-01 Supplement 1" in the process? Is it the volume of the Brookfield bid which has a reference to something similar, or is it the employer's requirements, or is it something older than that?

A I think in this case it comes from the appendix case submission.

Q By?

A By, ultimately, I'd say Brookfield into the contract, but from ZBP into the system, through Nightingale, through us (inaudible).

Q And that's the 2010 appendix K?

A Yeah.

Q Right, because this is a later document?

A Mm-hmm.

Q Do you see why the Inquiry might be confused, I think it's a fair point to describe this, that why there are simply

no extract and supply numbers in any of these Room Data Sheets, or almost all of them. Is that unhelpful from your point of view of trying to make sure that what is agreed is built?

A No, I do agree it would be better to show them. I can-- I think I've got an understanding as how that came to be, but it would be more helpful if they were on.

Q Because where are they in your systems?

A So, they're sitting on the drawings in terms of what the flow rates are, and then you would need to interpret the air change rate from that, which isn't helpful in this position.

Q So, I mean I recognise this is an isolation room, and in fact I'll just find the document I was looking for, so if you give me a moment to get it. (After a pause) This is page 45, isn't it? Yes, if we go in the same volume to page 393. We have the top page of a single bedroom in the Teenage Cancer Trust. I don't think it's quite the same room I keep referring people to, but it's the same row of rooms in Ward 2A. So, again, we have no extract, and no supply; we have a different note. So, this note is:

"Supply air rate at 40 litres per second 1. Bedroom balanced or negative with respect to adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room."

Where does that come from?

A That comes from the-- again, I'm going to say from the matrix into this, and from the ventilation derogation, I think has been referred to.

Q Yes, you see, what intrigues me is that you can see a route from this note back to the M&E clarification log that we've looked at repeatedly. Obviously, the reference (inaudible) to the second and the rest of the text finds its home there, and so presumably it goes from the M&E log to the environmental matrix to here, via the Appendix K; would that be right?

A Yeah.

Q If we go back to the previous one at page 45, the M&E log, as we've called it, a derogation, doesn't address isolation rooms. It just generates single rooms, and the reference in the employer's requirements, which I can take you to, in volume 2, to the isolation rooms doesn't mention air change rates. So, where's the air change rate for the single rooms coming from, the isolation rooms?

A From-- Does it not come from HBN-04 and SHTM?

Q Well, that's an interesting question, but if it does why isn't it listed here? It's listed on the drawings themselves.

A I don't know.

Q Because the question that occurs to me – and I've got a bit ahead of myself, but we seem to have picked it up here – is you've got these Room Data Sheets which I use for the user groups, and you might think, and in fact, I think it's the case, that this isolation room had a high air change rate. Is that your recollection for the children's isolation rooms?

A Yeah, I think it had 10 air changes.

Q Yes, and that the one at page 393 that we were just looking at didn't have a high air change rate; it 42lps, but from the point of view of a user group, that's not drawn to their attention.

A Mm-hmm.

Q Do you see how that might cause some problems for checking?

A I do, yes.

Q Because the evidence we've heard is that the user groups didn't discuss this page. I mean, you wouldn't know that, would you, because you wouldn't have been in the user groups?

A I generally wasn't at the user groups, no.

Q No, but would you accept that it might be the case that the reason that the user groups don't discuss these numbers could be because they're not there.

A It could be,

Q Yes, so if we go back to your arrival, you say you settled in for a few months and then you've turned it into work with ZBP, and so is this the process you've just discussed where they're taking from their matrix, they're taking the numbers to the Appendix K processes?

A Well----

Q That's what you're getting involved in first, really?

A -- yes, do you want me just to kind of talk through what I've found as I look back on things?

Q Yes.

A So, in terms of getting to Appendix K, ZBP had been designing on whatever information was coming out from the user groups, and whatever alterations were going from the 100 to 200 developments.

Q Could you lift your voice a little bit?

A Sorry, yeah.

THE CHAIR: I may have said this to you when you were last here, my hearing is not great, and if you could raise your voice a little, I would much appreciate that.

MR MACKINTOSH: And to resist the temptation to shrink down into your seat as well, that'll help.

A Yeah, sorry, which in the process had ZBP releasing a series of

drawings, quite a lot of drawings, at the end of July 2010, and they were subject to a user group review or workshop, shall I call it, actually. They were subject to a workshop in August 2010.

Q Yes.

A And again there were further workshops towards the end of August –

not quite certain of the date – at the end of August. That generated comments which were then incorporated into the design, and the Appendix K drawings and matrix were designed and issued round about November 2010. Now, I couldn't find attendee sheets for those workshops, but I could find the output of commentary from both Wallace Whittle and Capita----

Q How could Wallace Whittle have been giving commentary at that point?

A Because Wallace Whittle were still on the Board side. I know it's complicated with Wallace Whittle, but they were on the Board side for the hospital at that point, representing----

Q At which point is this?

A 2010, August.

Q So, it's been put to us that Wallace Whittle were stood down in at least January 2010, and then in February 2010, Currie and Brown's role was reduced, and it's been put to us that most people and indeed HLM and Buchan + Associates were certainly not involved after that date. Why do you think they were involved?

A Because-- well, a couple of reasons. One, I believe that the Board called them in on a kind of ad hoc basis for technical advice for when they require it.

Q So, why do you believe that?

A Because I saw them in a couple of meetings----

Q That's a good reason (inaudible).

A -- but also the sheet that I found which has the comments on has a column for Wallace Whittle and a column for Capita on it.

Q So, there's definitely a sheet----

A Mm-hmm.

Q -- with both Wallace Whittle and Capita discussing a ventilation issue.

A Not discussing a ventilation issue, reviewing the outturn of the M&E workshops in that 2010 period.

Q Where have you seen these M&E workshop records.

A I found the-- There's a schedule of user group meetings, and within that there's an M&E workshop meeting dates in there, and then I noticed----

Q Right. We've not been able to recover those M&E workshops data from

other custodians of them, so I think we may be about to make a request to Multiplex.

A Okay.

Q So, let's just understand what you've seen; how many M&E workshops were there?

A I couldn't say in total, but I think there were certainly two days in the first piece and at least, I think, a day on the second pass; there could have been a little more.

Q And what time of year was this?

A August. I think the first one was 18 August 2010.

Q Would these have covered the whole hospital or just parts of it?

A Yeah, so the information that I could find pertaining to them, it's relatively high level. It's not into detail room by room. It's system ethos's, it's system general, how are these going to work, how are areas of the hospital going to be served via vent, via water, via sprinklers, via whatever that goes in there, and I'm pretty sure I was at the meetings, so unfortunately I can't remember who else was all at them, but it was Wallace Whittle. Sorry, it was ZBP taking the Project team from the NHS side, including some of their technical advisers, through how the M&E systems would work at a kind of higher level and broad level across the hospital.

Q When you say the Board technical people, who do you mean?

A In this instance, I'm meaning Wallace Whittle and Capita.

Q Well, I mean, if you can't remember, then the document will say, but can you remember who the Wallace Whittle people were?

A No.

Q Can you remember who the Capita people were?

A No.

Q Well, we will have to make an attempt-- We'll have to recover those from you. In terms of the process of the M&E workshops, this is obviously quite high level as you've just discussed.

A Yeah.

Q Would I be right in thinking that there would have then been a further iteration of the M&E design after the Appendix K?

A Yeah, absolutely, so then it went into the kind of full RDD reviews after Appendix K.

Q Have you ever managed to find any M&E meetings then, in 2011?

A No, but I know what the process was.

Q What was the process?

A So, the process was that we would hold a pre-RDD meeting with the Board's team.

Q In this case, who is the team?

A That would generally be Frances Wrath, David Hall, and they may bring other people in if they saw fit, but the point of the pre-RDD meeting was to run them through the information they were going to get, and then we would get any comments they might have at the time, and we would try to address those before issuing the formal RDD pack, but it would allow them to understand what information they were going to get so that they could go and seek further technical input if they might need it in reviewing the RDD.

Q In that process, as far as you can see, was there ever any further involvement by Wallace Whittle?

A It's hard to tell from my-- exactly where things were on a timeline. So, the way it worked with Wallace Whittle was they were Board side, right? I'll take the labs first and just put that to the side, so Wallace Whittle designed the labs under the Board and were novated to us, so in the slide through the currency of the labs, there is an element of Wallace Whittle working for us on the labs only, independent of everything else. For the main hospital, Wallace Whittle worked for the Board for a while and then, as my understanding was, they were kind of on an on-call basis – that might be a better way to put it – and that continued to a point, I don't know exactly when. From the point, though that ZBP went into administration and Wallace Whittle took over ZBP and therefore became the incumbent designers for us, they didn't represent the Board anymore after that point.

Q That might be 2013, possibly.

A Yeah. I can't remember the exact date, but around about that time, yeah.

Q So, in this reviewable design process, the one where you're having the meeting with Mr Hall and Frances Wrath and others, that's in '11.

A That's in '11, yeah; '11 into '12.

Q Into '12, so if we just try and understand the level of detail, the meetings in August 2010 are system-wide, high-level.

A Mm-hmm.

Q Would that include things like how big the plantrooms are going to be?

A Yeah, I mean, nominally, the plant room sizes were reasonably well set because of the shape and the footprint of the building. However, the outturn of those would inform final plant sizing.

Q What about duct sizing, would that be something that would be picked up at that point or later?

A Not the specific size; the specific size would come a little bit later but it would give you primary duct routes,

and you show your way in and out of the plantroom and onto the floors of where your main congested areas were going to be.

Q So, if we just stick with ventilation for a moment and try and recap, because there's a lot of information coming across, your explanation of these figures on the Room Data Sheets is that they come from an environmental matrix that ZBP have. Do you have access to that document?

A No.

Q No. That environmental matrix should – and it's before your time – be derived from employer's requirements and the contract.

A Yeah.

Q Anything else as a source?

A Anything that varies the contract.

Q Yes. So the employer's requirements should normally, it might be good practice, have extract and supply numbers in them, but they will have actual air volumes, litres per second.

A In the what, sorry?

Q In the environment matrix.

A Yeah. From memory, I think there's possibly a mixture between litres per second and air changes, because I think the 40 litres per second statement is in there.

Q Right.

A And I think other rooms, it does say things like six air changes----

Q But you've not seen this document for some time?

A Not recently.

Q Where did you last see it?

A I couldn't say when I last saw it.

Q I mean, before the hospital finished?

A Yeah, I would have seen it before the hospital finished. I'm trying to think if I maybe saw it after the hospital finished. I don't think so, because ZBP were mainly using it as a design tool to keep a close track on everything that was happening and then going on to drawings and then into the room data sheet, so in my mind, once the Room Data Sheets were kind of finalised as for its status, the matrix fell away.

Q Yes, because to go back to this problem of clarity, in this isolation room, the room data sheet that we had on the screen at page 45 – and we can put that back up – the HBN supplement is going to be the source along with SHTM 03-01 of the air change rate, it just isn't said.

A Yeah.

Q And in the other room on page 393, the source of the air changes is the 40 litres per second.

A Yeah.

Q And in the single room that we're looking at on page 393, you will find 40 litres per second by presumably adding up the totals of any air input into that room?

A On the supply air side?

Q Yes.

A Yeah.

Q And on the other one, back on to page 45, you will find the air change rates measured in litres per second, but equivalent to 10 air changes an hour on the drawings.

A I believe so, yeah.

Q Now, those numbers wouldn't be on the 1 to 50 drawings that the user group saw, would they?

A No, they'd be on the M&E ventilation drawings.

Q Which would have been seen at these meetings that Frances Wrath and David Hall attended?

A Well, I would say yes. Yeah. Just to be clear, the meeting was a pre-RDD piece, so it was an informative piece. The pack then went to the NHS for them to review, and there was a time period for them to review. I don't recall----

Q There wouldn't be another meeting?

A Generally not be another meeting, no.

Q Will Multiplex retain the responses from GGC?

A Yeah, I believe so, although it was a manual copy at the time, so I'm not sure. Actually, I've said----

Q And how would those----

A I'm sorry, I'm just going to correct or add in: I said yes because I was thinking of the current workflows we do, which are all electronic, but at that time it was a manual workflow, so I couldn't hand-on-heart say Multiplex have still got those.

Q So let's imagine – take that off the screen, please – a notional drawing for an individual room somewhere in the hospital which shows 40 litres per second going in, and it's gone into that RDD process, it's been sent in the pack to GGC. If they haven't responded, you wouldn't have a response. You don't need them to sign it, do you?

A We did get responses across the piece, yeah. That was one of the things we would follow up to get the responses back.

Q Do you need them to sign it off?

A Uh-huh.

Q Can you imagine a situation where someone-- well, what level of technical competence would you need to understand a drawing or a room data sheet that mentions 40 litres per second to work out the air change rate?

A You would need to know the size of the room and-- I don't know exactly what terms of competence that would be, but you would generally be someone who was more maths, science, or engineering-based.

Q From your perspective, someone who was the M&E manager on site, who in the GGC team to you demonstrated that level of technical competence?

A I think in the team there was Alistair Smith later on. I wasn't sure if he was around-- he certainly wasn't around early '11, I'm not quite sure where he came in, and then I think there was a-- well, it was whether they called on Capita to review certain aspects, because I am aware of Capita reviewing ventilation drawings----

Q They say that in their statements.

A -- (inaudible)-- Sorry?

Q They say that in their statements.

A Yeah.

Q But would the GGC's own staff have been able to work out 40 litres per second meant three air changes if they hadn't seen the M&E clarification log?

A I think they would struggle if they hadn't seen the log.

Q Would you need to know the number of people in the room to do the calculation?

A No, because it's just 40 litres per second. It doesn't relate that to per person, does it?

Q Right. So there's this second reviewable design process stage. As you say, there's no meetings, but there's a request for a response.

A Yeah.

Q If we again go back to your involvement, and we try and not run ahead of ourselves as we've been doing, staying in '10, when you're doing the Appendix K process, who in GGC, apart from Wallace Whittle, are you dealing with?

A In GGC, I predominantly dealt with Mark Baird, who's Currie & Brown, at that stage. Other people involved were Alan Seabourne, Peter Moir, Frances Wrath, Mhairi and Heather. I wasn't daily involved with them, but they were both around in their respective positions. Douglas Ross on a commercial side, again Currie & brown, looking at the commercial aspects of it, Hugh McDermott, but I think Hugh was probably more looking at estates-type issues site-wide.

Q Is there any evidence that Hugh would have known about the M&E clarification log and the 40 litres per second decision?

A Any evidence? I don't----

Q From your interactions with him, do you think he knew about it?

A I would say I thought it was fairly widely known within the NHS' team that the single bedrooms were on a 40 litres per second----

Q Why do you say that?

A Because it just-- it was-- conversation was just kind of 40 litres per second in bedrooms. It was a talked-about thing.

Q There seems to be either a denial or a lack of memory or a lack of willingness to acknowledge that that was the case amongst those people. How would you respond to that?

A I can't speak for them. I can only speak for myself.

Q But you thought it was widely known?

A I felt it was fairly widely known in the team, yeah.

Q So again, staying in 2010 – we'll do the same for '11 and '12 in a moment – did you have any interactions with any Infection Control personnel? That would include Jackie Stewart?

A Yeah, Jackie was in the team as well, yeah.

Q From your interactions with her, do you think she knew about the 40 litres per second in single rooms?

A I couldn't say. I didn't have a lot of detailed interactions with Jackie.

Q Right, okay. Did you have occasion to deal with Professor Williams, the lead ICD?

A Not a name I remember.

Q Sandra McNamee or Devine, who was the lead nurse? Mr Walsh who was the ICA(?) manager?

A No.

Q No. There's been some suggestion that Dr Hood was involved about the renal dialysis in 2010. Was that something you came across?

A I was involved in some more detailed kind of workshop work on renal dialysis. I can't remember if it was '10 or '11. I seem to think it was '11 myself.

Q Right.

A But the name Dr Hood does ring a bell.

Q Now, this is probably a good point to put to you, a clause from the contract between Brookfield Europe and the Health Board, not because I want you to analyse it, but because I want to ask a question about it. Can we go to bundle 26, document 3, at page 202? This is 5.6, "Control of Infection". Do you see the first sentence, 5.6.1:

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

I'm not going to ask you to interpret the clause or what it means. I really want

to just simply ask what steps you and your colleagues were taking to consider the prevention and control of infection when you were developing the design for the hospital.

A I think we were taking a number of steps across the piece in terms of trying to follow the guidance, relying on our experience of where issues have been previously – and I'm talking across all systems here, not necessarily the water and ventilation – and staying in discussion with ZBP about the direction of travel on the design. So with that, if there was anything that we were unsure about, we would put it towards the NHS to ask for a view from Infection Control. I can't actually think of any specific items that we brought up in 2010.

Q So the one thing that I do want to explore with you is a series-- well, first of all, before we do that, was there ever a process you had for checking that rooms and wards complied with guidance? I mean the ventilation and derogation aside. Is it part of your process steps anyway?

A Not strictly straight back to the guidance. What we did check is we checked slightly more practically in terms of what the flow rate of air would be within certain ducts as to whether you'd get noise from it, whether you'd get separation of flow or those sort of things. Similar to water, and then we also checked back the Room Data Sheets as issued or prior to them being issued for RDD or the earlier issues, but we only checked them back to the matrix, we didn't check them back to the guidance. So we were checking really that the interpretation-- nothing had been lost in translation between ZBP and Nightingale, but we didn't take ZBP data backwards from there.

Q Okay, and so you're not going behind that ZBP environmental matrix, in a sense?

A No-- correct, yeah.

Q What I want to do is work methodically through what we've called potentially deficient features of the ventilation system. I would emphasise that we chose "deficient" because we didn't want to say "defect", because that has a meaning in the contract, and potentially because a feature might be not in accordance with the guidance, but not actually be harmful or cause risk. We've already discussed one of them, which is the air change rate in the single rooms, and so you've explained it in kind of detail, but just be clear, why was the air change rate for the single rooms in this hospital half what was set out in SHTM 03-2009?

A I couldn't tell you why, because that was through 2009

discussions and agreements. I think what I could say is the SHTM in terms of general wards and single rooms – and this is not quite the question you asked me so just stop me if I waffle off – allows for you to do it naturally ventilated as well. So at the time of 2010 when I was seeing that as deregation, it didn't ring a lot of alarm bells, because I'd seen four air changes plus natural vent and things like that in previous facilities.

Q So you would be sort of thinking, "Well, if you've got four plus two, then what's the difference to three," sort of thing?

A Yeah.

Q So if we move on to the second one, which is the single rooms that were isolation rooms-- if we take that off the screen. Can we look at bundle 16, document 4, page 314, which is HBN 4? Now, the reason I'm showing you this-- have you seen this before?

A Yeah, a while back.

Q The reason I'm showing you this is because this is what's referred to in the RDD sheet, Room Data Sheets.

A Mm-hmm.

Q And if we can just step through it to page 319 in the bundle, which I think is the second page of the document, do you see how there's an "Exclusions" text, bottom right-hand corner, paragraph 1.10?

"This supplement does not describe the specialist facilities required in infectious disease units or on wards where severely immuno-compromised patients are nursed. Guidance for these facilities will follow in a further supplement to HBN 4."

To be fair, it didn't follow. Ignoring infectious disease unit at the moment, because that's a late arrival that we're not going to touch on, why is it that the Room Data Sheets, presumably the environmental matrix, the actual designs for these rooms, attempt, to some degree, to model HBN 04, supplement 1, when some of those isolation rooms are for immunocompromised patients?

A Yeah. I can't answer that question specifically. All I can say is, at the time – and whether we go on to talk about the positive pressure ventilation lobbies – in my understanding of isolation rooms, that was a very robust way to create isolation between the patient and the space, so that, on my personal side-- I can't speak for our designers in terms of why they then followed HBN4 in those particular areas.

Q So, if I rephrase the question, because you obviously can't speak for the designers. It's more, what's the root? I just want to show you a different document before you answer the question. If we go and-- I think it's the

right one. It takes ages to open up; my computer doesn't like me today. What's the root, as you understand it, of why HBN4 was chosen? Where does it come from in the panoply of documentation?

A I don't know that, I think-- I'm gonna say it came before my time or certainly in the very early stages because all the recollections I have, and from what I've read recently, it seems to be from the outset that HBN04 would be followed for isolation rooms.

Q Yes, and could that have been connected back to either the Brookfield bid or to employers requirements as far as you can see?

A I'm not going to say it could be, but I not-- I haven't refreshed my memory of the bid at the moment.

Q If we can go to, no I think we'll leave that. Right, do you think there's any obligation on a contractor to spot something like this where you have a potential disconnect between an employer's requirement, i.e. use PPVL rooms, use these HBN forums, and a statement that the patient group in Ward 2A are highly immunocompromised, that there's an obligation on a contractor to say, "Are you sure, chaps? Did you mean to do that?"

A I think there's an obligation on anybody if they spot something that they don't think is right at any point in time. I think there's probably a knowledge gap between some of the healthcare side and some of the technical side and certainly, from my perspective as a M&E manager, looking at some of the immunocompromised patients and then the terminology that might be used elsewhere actually meaning the same thing isn't something I would automatically pick up.

Q This might be the neutropenic reference in SHTM 03-01 in the appendix?

A Yeah.

Q So, if we also extend that logic to the rooms in Ward 4B that were for the BMT patients. You're nodding. There's a transcript person that's going to type this up. When that was put in, what air change rates were got in there?

A In the initial design or after----

Q In the design that was handed over?

A I think the design had 8 litres/second.

Q So that would be six?

A Six air changes.

Q Is there an obligation-- Do you think-- Did Multiplex, as far as you know, let GDC know that they couldn't achieve 10?

A Yeah, I think it had to be done. I think that, by process, had to happen in terms of, I think, that part 4B's a little

cleaner. There was a change instruction for the use of that ward, or for the services in that ward from how I was looking at it, and that was then redesigned and resubmitted for review and approval based off of an instruction and a brief we were given. So, if an answer in that instruction, we weren't answering it correctly or they were anticipating somebody to tell us that at the time. So we put forward that through, I'll call it semi retrofit because there was some construction works undertaken and some not undertaken, or some taken out and put back in. But if we had put forward that the most we could achieve at that point was the six air changes and that was not satisfactory, I would expect somebody to say to us that's not satisfactory.

Q Did anyone respond?

A Yeah, the RDD was reviewed and approved.

Q Was your message that you couldn't achieve 10 clear or was it unclear like the Room Data Sheets?

A I didn't take it through so I can't say hand on heart exactly how that was presented but I have rechecked the ventilation drawings. So, the ventilation drawings say 80 litres a second. So, they could be clearer in terms of air changes.

Q Okay. If we go-- Sorry to dit around the hospital a bit, if we go back to Ward 2A, there were no HEPA filters in the individual isolation rooms in Ward 2A after handover. How was it that happened?

A So, my recollection is there were various areas of the hospital that either had HEPA filter, filter housing, so I would be the filter and the housing if I said HEPA filter, filter housings or no additional filtration in it and, as far as I knew, we had constructed it to the design and the requirements of what was needed in that area. Now, that is from what we were building to a design, not necessarily what was subsequently turned out to be required.

Q So, just thinking about these HEPA filters in 2A or other, they weren't there, there was the housing. I mean, maybe you'll accept this, I'll have to show you the document but there is a clinical output specification that mentions HEPA filters. I mean, it's not perhaps the best written document, we'll ask the authors, but it's a document. Would you have read that?

A I wouldn't necessarily read all the clinical output specs. I might drop back into a clinical output spec if something was coming up but normally-- I would normally pick it up from the stage after I'd expect the designers to pick up on the clinical output specs for the formulation of a design, and I wouldn't

necessarily go through each of them to see what was in them.

Q Where would the sign-off stage be for if they did GGC to sign off a design that only includes the housing and not the filters?

A That would be in the RDD----

Q That's the process you describe where you have the pre-meeting, you send the documents, and you're expecting a response?

A Yeah. Yes.

Q Does Multiplex hold the response for the design for Ward 2A?

A I would think so.

Q Yes. Have you looked at it?

A No.

Q Thinking about backup air-handling units which is something that is suggested it might be important. Why were there no backup air-handling units for, well, quite a lot of wards, but for 2A, 4B, and 4C.

A I think it's very unusual to put a backup air-handling unit in.

Q Right.

A It's not something I've done with any regularity in my career.

Q Okay.

A It would be more usual to put a twin motor in, so you can take one motor out and one in, but not-- very rarely put a backup air-handling unit in.

Q Did the system for Ward 4B have twin motors? It wasn't (inaudible).

A I can't remember.

Q Why do you think there was no lobby at the entrance to Ward 2A?

A That I'm not sure. I don't know why there was no lobby there. I saw on your earlier piece that at some point there appears that there was a lobby and ultimately there wasn't but I don't know the history of that.

Q This is me, I might be wrong so I'd be grateful to be clarified, I appreciate how the ventilation will go through the ventilation room design, refuel design process which you've just discussed. A lobby is a physical part of a building, of the ward, but it's not in the individual rooms. Is it possible that user groups were just looking at the rooms and not looking at the whole ward?

A No, not from my understanding but, again, I wasn't in the meetings. But I thought the user groups looked at 1:50 scale and 1:200 scale.

Q That would include the corridor?

A Yeah.

Q That would be the moment to pick it up?

A If it wasn't there, yeah. One of.

Q Because----

A One of the moments to pick it up.

Q Where might the others be?

A I think you've already touched on ceilings and ceiling types.

Q Yes.

A Would give an indication, and then obviously the ventilation.

Q Now, I want to take you to-- I just want to jump forward. Yes, because what I'm going to do now is I'm going to jump forward to the general design process to TB and then onto some water-related issues. Then, at that point, I think we might have a discussion about commissioning and validation. Can I take you to an email from 5 January 2014 from Mr Grindley of Multiplex to David Hall of Currie & Brown and that is bundle 46, volume 2, document 39, page 1059. It should be the second email on the page; yes. So, this is an email a few days before handover. "Please see attached correspondence from Wallace Whittle advising the Isolation rooms throughout the hospital have been designed in line with SHPN 04 Supplement 1. Wallace Whittle [can] see no reason as to why the isolation rooms cannot be used under the guidance issued previously by NHS."

So was Mr Grindley working for you or was he your successor?

A He was working for me as part of the team.

Q How did this issue arise in early January '15? I mean, I have a theory but I've been to see what you're----

A I don't know if you got the preceding email trail.

Q Might do, next page. We do, and the next page. So, it's a request David Hall, but you know where it came from before David Hall?

A No.

Q Are you aware of any intervention by infection-control doctors at this stage?

A No.

Q In the period between you-- Well, remember I asked you about infection control in 2010 and you mentioned Jackie Stewart? In the period between the end of 10 and the end of 14, did you have any interactions with members of the infection control team about ventilation?

A Strictly ventilation? Not that I can specifically name, but I don't know who was looking at the information once we passed it across on the RTD process, so I don't know who-- where that went after that. We had David Hall and Frances Wrath are the sort of people facing us in the conduits. I don't know who then looked at that, but I can't recall specific discussions around ventilation with infection control. Did look at a lot of things on site.

Q I'm going to show you two emails, which I haven't given you

advanced notice of, but they might, I think, be quite informative if we show them to you. It's fair to say that I haven't shown them to their author because I didn't do so, but I'll send her a questionnaire about them. So, hopefully, she'll be able to respond. But they are bundle 14, volume 1, pages 21 to 23. So, this is an email from Mr Stewart to Mr Walsh, Ms McNamee, Mr Williams, Pamela Joannidis. So, it's infection control about ventilation. The reason I'm mentioning it is:

"Please find attached the ventilation specified so far. As I said I'm meeting with the M&E chaps next week to go into some more detail."

Now I realise that's August 2011. I don't think you've said you've met with Jackie Stewart?

A (Inaudible)

Q Who the M&E chaps you'd like to be meeting with?

A Yeah, well, Jackie Stewart was attached to the Project team and, within the M&E side, I suspect from that timing that that would likely be some of the M&E RDD, likely, and that would be ZBP and it would be one or two people from, or one of possibly three people from the Brookfield M&E team.

Q So people from your team plus ZBP, right.

A Yeah.

Q Then, the next email is same bundle, but it's page 25 and 26. This is a year later. So, it's the bottom of the page, 23 August 2012. This to Professor Williams:

"Hi Craig, the technical guys were wondering if you were available to meet them on the 5th or 17th September [2012]?"

Who would be the technical guys in this context?

A I'm not sure. That could be, again, that same group of people from ourselves or it could potentially be somebody on the board side. That's not clear enough in terms of who else is on that chain.

Q No, they're entirely, in effect, control people. Thank you, you can turn it off the screen. In fact, I'm going to be really cruel, let's go back to that bundle on page 26, please. Next page. In fact, page 23, sorry. This document was sent by Ms Stewart in the second email, and she describes it as the ventilation specification for the hospital. It's a bit short. Do you see how in it there's references to 10 negative pressure rooms in critical care, three negative pressure rooms for a respiratory ward, renal inpatient to have two positive pressure rooms, and there to be two negative pressure rooms, no anti-rooms in A&E. Now, I'm not expecting to play a memory

game with you now, because I know that's a bit unfair, but I think the broad brush I can ask you. This is broadly consistent with a meeting in May 2009 when some element of the ventilation specification is agreed by Infection Control before the bid starts, but the striking difference between this and what's ultimately built is all the different types of isolation rooms, and I just wondered if you'd had an awareness of there being anyone in GGC thinking they were going to get a wide variation of types of isolation rooms in the hospital?

A No, not particularly.

Q You generally thought they were all going to be PPVL, pretty much?

A Yeah.

Q Thank you. Take that off the screen. So, let's turn on to Horne taps. Can we go to your statement, page 107? You describe a process and your involvement in it, but you're a bit light on dates.

A Yeah.

Q And so I want to nail you down. So, when you look in your answer at (a):

"No concerns as a very thorough dialogue and review process had been undertaken with all stakeholders involved to reach the conclusion of using the Horne tap."

Was that in 2012?

A Yeah, yes.

Q Right. I put to the author of-- if I can pull this paper up, I wonder if you'd seen it. Bundle 43, volume 1, document 46 page 231. This is put to Frances(sic) McCluskey, and I think she claimed to be the-- she certainly laid it out, anyway. It's a three-page paper on Horne taps. I wonder if you ever saw it? It's a bit unfair to ask you at this short notice, but----

A I don't recall seeing it straight away, however it was a pretty-- it was a reasonably close working group between the NHS, their team, not just the client Project team but also wider team, and ourselves in terms of the tap selection. So, I may have seen it at the time, but it doesn't-- I don't----

Q You describe it as "a thorough dialogue"?

A Yeah.

Q Right. There is one document where I do need to play memory games with you, which is a chief executive's letter, which is bundle 27, volume 3, document 36, page 622, which I didn't put in the document list. It may have made it on last night, but you might not have seen it. So, this is a chief executive letter from the chief medical officer to Board chief executives, 7 February 2012, about Pseudonomas related to hand washing facilities. It follows up various HFS emails and an SBAR, and it seems this

wasn't included in the GGC paper that Ms McCluskey had part of authoring. Is it something that you've come across? Next page, please. It's called the Sir Harry Burns letter in this field.

A Yeah, I don't know recall it from the time I read it this morning after it got included last night.

Q Right. The reason I'm asking it is because obviously there were some concerns about Pseudonomas in Northern Ireland and, I think, Western Australia around the time. Was this decision being made before or after the issues in Northern Ireland came to light? This can go off the screen.

A Before, as far as I'm aware. Yeah, the decision-- certainly from my understanding of the timeline, the decision to use the Horne taps was prior to there being any known issues on them.

Q But it might have been after this CEL letter?

A Could have been, yeah.

Q Right. Now, if we take it off the screen, just to check who was involved in the taps issue from your point of view, there's Ms McCluskey, who else was involved?

A I think Janice was involved, I think Alan Seabourne had an involvement----

Q Which Janice?

A Sorry, not Janice, Jackie.

Q Jackie Stewart?

A Yeah. Ian Powrie, I think, was involved; myself. There was Mercury-- I'm not quite sure who from Mercury was involved, it might have been Sinead, and there were probably one or two others in the wider NHS that were consulted and looked at as----

Q I know you've described the process as "thorough", but do you have any concerns that the people on the GGC side have sufficient knowledge and experience to understand the Board on this decision?

A I didn't know, because I was fairly aware that they were consulting around the wider NHS and getting people's views, opinions, and these taps had been in use in certain places, and finding out what the feedback was and how they were performing. I knew at the time tap selection was always particularly tricky, and I wasn't aware at point in time of any particular go-to tap that didn't have some issue, so I thought it was a good process where various stakeholders were engaged at various levels and who had the experience of using the taps as well, so----

Q If we move on to commissioning and validation, do you understand the difference between commissioning and validation of a ventilation system?

A Yeah.

Q What's your understanding of the responsibility that a contractor has towards validation?

A Towards the validation?

Q Yes.

A Basically be on hand to assist at the point of validation.

Q Do they have any obligation to make space in a timetable or programme?

A No.

Q And why do you say that?

A It's just not part of the contract. It may be there is space in the timetable, in the programme, for various things which are named as client activities if they're required pre-handover, and they're usually listed in the contract, you make allowance for them, such as occupation of IT rooms, fitting out various bits of equipment, Group 3 equipment. So, there will be activities that are client-led activities that form part of the contract and have spatial allowance or time frame allowance within it.

Q But validating doesn't?

A Unless it's named. Sometimes it can be named, and it depends what is being validated.

Q I want to put a sort of a scenario to you. If you were listening to Mr Wilson this morning, you'll have heard me do it already. Imagine that you're coming up to the end of this contract, you've successfully commissioned, you obviously want to get handover, you want to get paid, you want to send people off to do other things. Is it not prudent to allow some time before validation to enable that to go to head to your timetable?

A I think, from our perspective, I would have anticipated the validation to occur in the migration period. Part of that is----

Q Is that before or after handover?

A After handover. Partly because usually you want to validate pretty close to patient occupation so that you know the status of the system as you put patients into it.

Q But then there would have been the risk that validation would have disclosed non-compliance with the guidance?

A Yeah, and you would-- you would ordinarily leave a little bit of space in your pocket, but not for something like that. You would leave space in your pocket for if there were any small workarounds required or rebalancing required.

Q What do you mean by "space in your pocket"?

A Like, if I was-- if I was looking at a validation piece and saying, "Patients

arrive in six weeks and it's going to take us three weeks to do the validation," you might start it four weeks early, so you've got a week spare.

Q Right. There is a group called the Joint Commissioning group, and we can see its description on bundle 30, page 50, which-- I think you might have been a member of it.

A I did join that for a while, yeah.

Q It's the sort of lime green column, four from the right, and do you see how one of the options is, "Manage specialist validations required ie pharmacy, CCSD, mortuary"? Is that to do with ventilation validation or something else?

A Those ones specifically may not be, but it does look like it's talking about specialist validations across the board.

Q So, if this group is working, is there any sort of expectation in this structure that there will be validation?

A Yes, however, there could still be both sides of the handover line.

Q Right. We understood that the decision was made to not have an independent commissioning engineer, and this morning I showed Mr Wilson a document, a PMI, that names him to be the commissioning engineer, but obviously he's not independent. Were you involved in that process?

A I was involved in some of those discussions, yes.

Q What was the reason that it was decided by Multiplex to use Mr Wilson?

A Well, we put it forward as a proposal. The decision was a joint decision, because the instruction came back for it to be-- so it couldn't-- it wasn't in Multiplex's give to purely decide it. The main reason was to allow better access to that person from all parties, particularly the client side, and that, when we read the brief that was described in what the independent commissioning engineer was to do, it was basically an administrational role, which is the same role as we would have in the commissioning manager, and, within that, it was part of the Multiplex contract to provide this person. So, therefore, it wasn't changing the contractual setup. If it was looking at what you might consider or what I would consider a truly independent commissioning manager, they would tend to sit either client-side or as a joint third-party appointment, not within the body of the contractors' contractual arrangements.

Q I mean, I'm not going to get into-- it's probably not your area of expertise, the complexities of the balance of the NEC3 design and build contract, but it does seem to be quite a structured

approach with lots of people having jobs to do. Was there any discussion about whether it was a good idea to change something that was in the original structure so late in the day?

A I think there were-- Yeah, I think there were discussions. I don't think this was an overnight decision. There were discussions for a few weeks going through on the pros and cons of this aspect.

Q Does it save money?

A Did it save money? Not particularly. It maybe save Multiplex's markup of a small percentage on somebody else. If it was a subcontractor, we'd have got a percentage fee on that, but that's all.

Q Because it could be described as the downside is effectively it's, to a degree not originally planned, Multiplex marking its own homework.

A No, I'd say that's the incorrect view.

Q So why would you say that?

A Because the person's role was not to accept any of the commissioning results. The person's role was to administer and run the commissioning process, but not in terms of accept any of the results or signing any of the results off.

Q So that would still be done by you and others?

A No, that would be done by Capita, by the designers. So, the designers would sign a system off that it met the design. Capita and/or the NHS would sign off the system that it met the design promise as far as they saw. So, Multiplex in itself doesn't sign off the design results because we're proposing that's what they are.

Q The reason I mention it is because it has been suggested by some that Capita might not have done everything it was supposed to do, and we're getting into the details of that contractual dispute. Would it not be an advantage to have an independent commissioner so there are two checks? There's the independent commissioner doing the commission and then Capita checking it. You're not relying on one check.

A It could well be, but that wasn't the job description of that specific independent commissioner engineer. If you had the scenario that you're talking about, I would agree, but it would normally sit outside of the contractors' contractual mechanism and it would say as a as a third-party piece or an employ-- an employ----

Q So, you see that as an important distinction?

A Yeah.

Q Right. I'm going to move on to

open pipes. Now, I gave you the world's longest document list of these, pretty much every single-- it's not quite as-- that's a bit of an over exaggeration-- an awful lot of the NEC3 supervisors' reports throughout the life of the project, and interface action notes as well, and I realise that the work was probably being done ultimately by Mercury, but what would you describe the development and/or potential resolution of the open pipe problem, if I can call it that, over the period of '11, '12, '13, '14?

A Yeah. So, I would describe it, and I'm sure you have my statement on the same piece, that Mercury had a pretty robust system for keeping things covered, and I'll get that-- it does appear in most of the Capita reports. However, let's say, if we go back to the start, Mercury pre-fabricated pipework off-site, they built modules off-site, and they made a lot of it in factory conditions, which immediately gives you better internal pipe conditions than making it all on the project and on the site. All of that came capped and remained capped in situ in place.

On occasion-- Well, caps would need to be removed for works to be undertaken on those particular parts of the system, or modules, and, on occasion, caps or tapes and capping would be knocked off or would come off or perhaps might not be replaced after some work had been undertaken. But that was, in my view, the sort of much smaller end and rare side of it. When I looked at it in context, I thought Mercury managed it-- managed it pretty well. They were very aware of the importance of keeping the pipework clean, and they set up a number of processes and protocols to try and keep things protected at all times. Now, Capita were very thorough, and if you look at the angle of some of the pictures that they've managed to take in their reports, that shows how deep in looking at various aspects of the quality of the construction was, so yes, Capita picked up open ends on pipes, but in my view, it was not an endemic problem, and it was resolved quickly by Mercury. I think as you see the time go through, they get better as time goes on. I'm sure you're aware the 2011 references are all references to the labs building----

Q Yes, of course.

A -- March 2012 in terms of the hospital building, and to supplement that in the Capita reports, they pretty much always say, you know, installation is to a good standard, and in 2013 – so they picked up open-ended pipes through 2012 – in 2013 they are referencing back to the good practice of 2012. So, my feeling at the time and my re-review of those reports is, yes, it's an issue that I'd

expect anyone to raise if they saw one anywhere, but it wasn't a major problem and it wasn't continually unresolved. It was different areas that may have been getting worked on at that time.

Q One of the documents I put in your bundle was SHTM 04-01, part E, which is bundle 15, document 7, page 606, and I have recklessly not noted down the paragraph that says this, but I understand it says within the document, " **Note**: Any pipes delivered unprotected or with open ends should be rejected." Is that something you would be aware of as a principal?

A Yeah.

Q If we take that off the screen; are you aware of what percentage of pipes were rejected as----

A Not in terms of a percentage, but I was aware that following that clause, and I think two below it, Mercury did reject pipes that were damaged, pipes that were out of shape, and pipes that arrived uncapped. The number of pipes arriving uncapped was absolutely minimal. I can remember one delivery myself, so in terms of percentage, that would be very small over the whole piece.

Q We're about to come to the topic of filling the water system, and I suppose I can ask the question twice. The first version of it goes like this; were you aware of the terms of the 2015 DMA Canyon Legionella assessment that was done in April 2015?

A Not until 2020-2021.

Q But you have read it since then?

A Yeah.

Q So, you're aware that Greater Glasgow and Clyde have claimed that this water system had systemic contamination at handover as part of their litigation?

A Mm-hmm.

Q You're nodding. In terms of the open caps issue, the pipes issue, what's your reason for thinking that that didn't contribute to such a problem, either version of the problem?

A At some point-- So, I think I'll look at it in a couple of ways. I'll work out how many pipes were on a module and how many modules there were and then how many joints there were. You're talking-- At any time, there's a couple of thousand ends of services to be worked on, and in any report there's two or three, four, five, six caps, so you're talking in the region of sort of, 0.08 per cent of uncapped services at any point that Capita were doing an inspection. The caps, from my perspective with Mercury, were immediately replaced whenever anyone spotted them, and it wouldn't just be Capita. Mercury would do that off their own back. They'd do it if we saw

any, you know, they were very prompt at doing that. The systems inherently –

in any building – you have to take the protection off to continue the construction part of it.

Q Yes.

A How long is acceptable for that and what are the conditions that the pipe sits in? So, our construction sites were reasonably clean. They were reasonably well looked after. There was a lot of prefabrications ongoing, which meant there was a lot less cutting on site, I don't think it was-- There was barely any welding on site. There was very few of the more dirty construction activities that you might have had in the past, where we were embracing a lot of modern techniques.

I think that the exposure to pipes being-- or pipes being exposed was pretty minimal in the basis that you would have to have them open-ended at a point in time to work on them and continue the installation, and I don't know of any kind of definition around what is an acceptable length of time or exposure or not, but what I'd say from my experience, it was a well-managed system by Mercury.

Q I'll move on to the filling of the water system. Now, again, I gave you a reference to a supervised report. I want to learn from my experience with Mr Wilson, because I think I took him down a few rabbit holes. If we could go to bundle 21, page 213, right? So, this is a drawing, a diagram, Figure 1 in Dr Walker's report, and it contains some annotation that he's added on, so it's bundle 21, page 213. If we could zoom in the top half of the page so that Figure 1 is the bottom of the screen, thank you. Now, I'm only interested in domestic water systems, so I appreciate that someone might have filled the heat exchanger systems or the chilled water system, but that's not the purpose of these questions. You've discussed filling the pipework in your statement on question 44, and that's on page 108 of the bundle. You said:

"Yes the system was filled as it had to be prior to MPX completion. This was complex operation and left until the last moment feasible in the run up and timing of handover. The standard process was followed of pressure testing the system. Then filling, then cleaning and disinfecting the system. After which a maintenance regime for turning over the water was put in place with Mercury Engineering employing a squad of personnel to turn the water over and run outlets to a set pattern, signing off on the sheets in situ. These sign off sheets were left in place for the NHS estates team to continue the flushing regime once they became the owners of the

system."

Now, you haven't mentioned commissioning of the water system. Would that fit into your standard process here?

A Yeah, it would be in that.

Q Yes, so we had some evidence this morning from Mr Wilson. I think I should probably check what I wrote down, so I get it right. He's describing a first fill in plantroom 21 in June 2013, a gradual fill out from there down the system, and then about a year later, commissioning starting again in that part of the system around plantroom 21. Is that something you'd accept as an approximate timing of when the water was filled?

A It wasn't my recollection.

Q Right.

A My recollection was we filled the water systems circa July-August '14; July-August-September onwards. However, I did listen to Mr Wilson this morning, and if he has reason to believe and has read something that says we filled that system in '13, I would accept that.

Q I mean, he was looking at minutes, and at one point, I think it's fair say he didn't quite know which system he was talking about, but they were quite early minutes, from earlier in '13.

A Yeah.

Q What level of knowledge would you have had at the time to inform your memory?

A Generally, I would be commissioning programmes, testing programmes, testing results, that sort of thing.

Q Is that more him or you?

A Well, it would be him, but I would have updates and access to them coming to me.

Q I'll see if we might be able to get a minimum possible date on the basis of when the systems were finished, because I'm presuming you might be able to tell us when the water system was actually finished and that you can't test it before it's finished in that sense.

A Yeah.

Q When would the domestic hot and cold water system actually have been complete?

A So, there were, as you've seen, I think you saw this morning, it was broken into four parts.

Q So, we'll go back to this figure on bundle 21, yes.

A Yeah, so plantroom 21 was the smallest part of it and that fed the west side of the hospital, A and E, and----

Q I'm just going to get my colleague to zoom into the top half of image, just to help us understand. Right, plantroom 21 is the smallest part, yes.

A Yeah, and I suspect the last part to finish was probably plantroom 41, potentially, which was the children's or one of 32 or 33, which fed the tower, which would be the last pieces to finish, and I'd think they would finish round about November '14.

Q Which means gives them only a few months to test and commission.

A Yeah, which is why David, and his process was needing to start some of the earlier areas in that July-August time, to run them round and then keep them running, and then you would finish on the last available, on the critical path.

Q I'm trying to understand who's in charge of the water system, and the reason I'm asking is because David Wilson's explained that in December of '14 there would have been tests by H and V of the water – you're nodding – who in the system on site is ultimately responsible for making sure that the water is being maintained in such a condition that when it's handed over to the client it is safe for use?

A Yeah. Mercury have that responsibility until hand over.

Q Does that mean delegated to them by a contract?

A Yeah, and they may discharge that to H and V. I don't know that the details of their subcontract to H and V.

Q Does that responsibility only arise through the contract or does it arise from any legislation, as far as you understand anyway?

A I've always gone through it with the contract, the way we do.

Q Okay. Can I take you to an email about the handover, and this is the last thing before we have a short break to see if there's more questions? Bundle 46, volume 2, document 14, page 411, an email sent to you by Mr Powrie. So, Mr Powrie, Sector Estates Manager, emails you on 13 November 2014 and asks you to set up a meeting to progress the handover requirements of the Zutec system. Now, I want to pick up some of the things on that agenda item – because we've had some evidence – and get your response. Asset tagging; it's been suggested that there was not complete asset tagging and it wasn't actually completed until 2017. It appears quite often in the DMA Canyon reports. How would you respond to that?

A So, I'm going to say everything was labelled, so all the main plant was labelled to go back, so we could tie it back to Zutec, that was part 1. The asset tagging part, I think my recollections are at odds with some of what you've heard, so during the currency of the construction of the hospital, we were aware that the NHS were looking at doing a-- I don't know if it was just campus-wide within the

southern site or whether it was wider across Greater Glasgow and Clyde, a new asset management and CAFM, basically, system, and in there, there were discussions between us, and I think myself and Ian were involved in these discussions at various points, that we had an obligation to provide a full asset register system, MICAD(?) drawings through our contract.

Was there any point in us doing that, that would then be potentially different to what they were going to go and get from a campus-wide perspective? So, we tried to get to a point where we could marry the two up, which meant we were doing everything through Zutec, and PPM schedules, and everything else, and the intention was we would export that data from Zutec in a format that was suitable for them to use in whichever new CAFM system they brought forward----

Q Because the impression that one gets----

A -- in that, sorry.

Q You were about to-- I thought you were stopping, so if you keep going, please do.

A I was just going to say that in that was the definition, the types and what information, what codes, etc., you put on these asset tags. It took a lot longer to reach that point than originally envisaged, and I don't think we got that information until about the time of this email, until round about the latter part of 2014.

Q So, you'd reject the idea that there wasn't asset tagging at handover?

A No, no, I'd say there wasn't asset tagging, but I'm giving you the reason for why there wasn't.

Q Ah, got it, I understand, and when it comes to PPM and scheduling that, there was suggestion from DMA Canyon and others there wasn't a full PPM schedule at handover. Is that correct, or is there a reason for it?

A I don't believe that was. I don't believe that's correct in terms of my memories through it, and again, give me a moment; for the lab building, I actually seconded someone up from RFM, part of the business in Peterborough, to come and set up all the templates and PPM schedules for the labs. Admittedly, we didn't do the same for the hospital, but we copied all the same templates over and populated those. I hadn't had any receipt that the lab's information was bad or any complaints about it, so we repeated the same thing for the hospital, and as far as I'm aware, they were uploaded at the time of handover.

Q Could it be as simple as the fact that Zutec is quite hard to use?

A I think there's some

complications and some of the confusion lies in there, yeah.

Q Because I mean, you get the impression that either stuff isn't there or people can't find it. What do you think it is?

A I think it's a bit of both. Well, I think it's a bit of both. I think it's more on the finding aspect, a fairly complicated building. We tried to follow the Vizera(?) standard file structure, but it didn't----

Q Sorry, just say that again for the benefit of the transcriber.

A The Vizera standard kind of file structure, it didn't lend itself to be wholly just ported straight over, so I think it was in a bit of consultation. We did things by plantroom on the basis that most of the people looking for the M&E information would be Estates people, and to help them, hopefully, orientate better, we did it by plantroom, which gave them a geographical location over the floors within the hospital, and I think that has caused some confusion because then you don't just have a folder of X, you know, you have to go into a plant room to then find X within the plant room.

Q Right.

A And that might be different to a different plant room.

Q So if you search for all the calorifiers, they are in fact in six different folders?

A Yeah.

Q All right. What I'm going to do is I'm going to ask you a question, but not get you to answer it, and then we're going to have a short break to see if there are any other questions. I wouldn't mind asking you this question when you come back, which is, from your perspective, what are the sort of major differences between the experience in Edinburgh and Glasgow in terms of delivering the ventilation system? I'll ask you to reflect on that while, my Lord, if we might have a 10-minute break so I can check with the core participants for the questions.

THE CHAIR: Are you happy with the question? I mean, it's quite a broadly----

MR MACKINTOSH: I'm very happy----

A I'm happy with the question, and it'll a personal opinion.

Q It's a personal opinion. I just want to get a feel for what is-- I mean, ultimately, three biggest things or the one you think is most important. I'd be grateful for that information.

THE CHAIR: All right. Well, we'll take a break of about 10 minutes.

(<u>Short break</u>)

THE CHAIR: Mr Mackintosh.

MR MACKINTOSH: Thank you, my Lord. Mr Pike, before we turn to the question I asked you, I've got a pick-up question about the independent commissioning engineer. I wonder if we can look at our document, it's PPP13, so that's at bundle 26. If we can go to page 205, I'm just going to-- What happened when we wrote this document is we lifted sections from the contract. Now, I'm not asking you to interpret them in broad terms because it's not a contractual issue, but more just to look at some of the verbs and then revisit your evidence, I think, and see where you sit. So, 6.8, "Commissioning and Handover", this page 205:

"It is envisaged that the Contractor will appoint an Independent Commissioning Engineer to manage/programme/collate all M&E Testing and Commissioning processes, all as detailed in Appendix M..."

Firstly, was it always the case that Brookfield would choose the independent commissioning engineer?

A Yeah.

Q Yes. Secondly, had you come across this sort of arrangement before?

A Yes, but not titled "independent commissioning engineer". Normally requested that the contractor will have a commissioning manager in their team.

Q So, had you come across the idea of an independent commissioning engineer before or since?

A Yes, before and since.

Q But the independentness?

A Yes.

Q Does it work? How does it go?

A The-- Sorry, the independentess-- they don't sit under our contractual frame, they sit to the side of us as a client appointment, usually.

Q So, if you wanted a truly independent commissioning engineer, they would have to be appointed by the client or jointly?

A Or jointly. I would say-- I mean, I'm not quickly speaking, because people will undertake their role to the best of their abilities and honestly, right? So, if we look-- if I take that further down the stream, you've got H&V who work for Mercury, who are independent to us and Mercury to a large extent, but contractually it goes through Mercury, so it's very difficult, in a position potentially like this, to claim they're fully independent.

Q But if they were appointed jointly by the client and the contractor, they might well be independent?

A Yes.

Q If we could jump forward to page 213, there's another reference to it, 8.2.2-- 8.2. Again, it's a reference to-- but

this time with a small “i” but that may be our mistake, to the contractual appointment. Finally, I wanted to look at 214, 5.2. So, from your point of view, the independent commissioning engineer would have been independent, but appointed by the contractor, had they been appointed?

A Yes.

Q And they would simply be doing the same work that Mr Wilson eventually did?

A Yes.

Q But the question of whether the commissioning was acceptable or the product had been built in accordance with the contract was ultimately for Capita?

A Yes.

Q Thank you. Take that off the screen. My question I asked you before you left for our little 10-minute break there was to ask you about the difference between Edinburgh and Glasgow, and the reason I asked it, and perhaps to be more precise, is you’ve obviously given evidence in the Edinburgh leg of the hearing and ventilation was an issue there, and now you give evidence in the Glasgow leg. From your perspective, what was the difference, in the experience as an M&E manager, between the two procurements in ventilation terms?

A I had a different role in Edinburgh, and I probably arrived there slightly later in the process than I was involved in Glasgow, so-- Sorry, I arrived----

THE CHAIR: Could you keep your-- I’m very interested in hearing your answers.

A So, if I picked the question up right – if not, just please interrupt – I wasn’t particularly involved in the procurement side of either of the two hospitals. In Glasgow, as we spoke about, I’d arrived in March 2010, and the procurement was largely through by that point; I know we were working towards the instruction to proceed for the hospital. And likewise, Edinburgh, when I arrived in Edinburgh, Multiplex had already been awarded the contract and moving forward with it. I don’t think I’ve answered the question correctly, though, so have I picked you up slightly wrong in terms of making it relevant to procurement?

MR MACKINTOSH: I suppose the thing I would ask is that, it might be said in each case that, to some extent, small aspects of the detail-- I don’t know how you count it, of the two ventilation systems between the two hospitals end up being not as some people wished.

A Yeah.

Q And one of the ways that you can address that is by systems of spotting it in time to fix it before it gets

expensive. Do you have any comment to make about how those systems worked in Glasgow for picking up the issues that turned out to be a problem around isolation rooms in 2A, Ward 4B, the whole of Ward 2A? Why in your views were these issues not picked up before handover?

A So, I probably have a slightly wider answer covering a bit of experience across various hospitals, but I do think it's probably relevant here. There is a lot of people with very detailed clinical knowledge and what is required for patients with certain conditions, and there are a number of people with a lot of technical knowledge who know how to design the technicalities of various systems to give you whatever output that might be, and I would say they don't spend enough time together early on.

There's a group of work done on a client side to formulate a brief and get what people want, and then there's a competition of sorts amongst firms to then build that particular project or design and build that particular project, and then they kind of pick things up and take them forward from there, and, in my experience, I think there would probably be benefit to having some more loops back to that origin point.

Q So, when you mean the origin point, the people who wrote the clinical output specifications and the employer's requirements?

A Yeah, the people who have got to use that space ultimately in the end, and I know we have user group meetings with those in, with various people in, but it's almost about having a hold point whereby you get to a point and everything is just held and rechecked at that point, "Does it still meet what people intended a way back?" which might be five or six years back.

Q Could it be, and if I'm putting words in your mouth please don't accept this, that the decision to separate the technical part of the reviewable design process from the user groups might in some way have been the cause of issues being missed?

A I think there's-- there's got to be something in that part, but also, having been part of those processes in the past, if you try and put that all together, I think it's going to be a difficult collective of people to keep interested for the point of the presentation, so I was possibly going to a similar place but thinking of it as a gateway review type thing rather than flowing the system. Because-- Yeah, if you do all of the M&E route-- well, assuming you get M&E and architectural to the right place, because I think Emma explained there's certain aspects that need to happen to let the

next piece happen, then the group of people you need in a particular room for an RDD review to do everything together is quite disparate and quite expansive, and it would be, I think, a good thing, but I also think it would be difficult to achieve practically.

Q Just to make sure I'm understanding you correctly, are you effectively saying that a lot of the user groups are about where the furniture goes and where the beds go and that sort of stuff, whereas the issue I'm asking about is more inherent to the building, the ventilation and the water, and the two don't necessarily sit on the same agenda?

A Yeah. I'm not saying they couldn't fit on the same agenda, I'm saying there are different groups of people that would have their specialism to review that information, so it would be-- there's the practical sense of how you do that is what I'm saying is difficult.

Q Might there have been value in having a process that effectively took each clinical output specification not as a document, because obviously it had evolved through the process of the contract, but as an agenda, and so you would ask the question of each of the key wards and the general wards, "Is this ward right?" There doesn't seem to have been that process in this case.

A Not entirely sure. Not being at the user group meetings, I don't quite know what the agenda and what the discussions were in those user group meetings, but it's clear that something has fallen down between what people thought they were going to get and what was ultimately put together.

Q Thank you. My Lord, I've got no more questions for Mr Pike. I don't know whether you-- or maybe that I prompted something in the room.

THE CHAIR: So, there's no more questions----

MR MACKINTOSH: No more questions.

THE CHAIR: -- in the room as far as you understand? Mr Pike, thank you very much, both for your evidence this afternoon, but the work that went in behind that evidence in answering the questionnaire and reconsidering documents and considering documents you may not have seen before. I'm very grateful for that, but you're now free to go.

A Thank you.

MR MACKINTOSH: Thank you.

(The witness withdrew)

THE CHAIR: Now, Mr Mackintosh, tomorrow you're with us again.

MR MACKINTOSH: In the morning for Mr Ballingall----

THE CHAIR: In the morning----

MR MACKINTOSH: -- and then Mr Connelly in the afternoon with Mr Fernie.

THE CHAIR: Right. Is it just Mr Fernie in the afternoon?

MR MACKINTOSH: I think so, yes.

THE CHAIR: Right. Very well. Well we'll see each other, all being well, tomorrow at ten, and can I wish everyone a pleasant evening. Thank you.

(Session ends)

16:00