SCOTTISH HOSPITALS INQUIRY

Hearings Commencing
19 August 2024

Day 31
Tuesday, 8 October 2024
Dr Linda de Caestecker
Mr Tim Wafer

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10:02

THE CHAIR: Good morning, everybody. I think we're in a position to begin with Dr----

MR MACKINTOSH: Dr de Caestecker.

(The witness entered the room)

THE WITNESS: Good morning.

THE CHAIR: Good morning, Dr de Caestecker. As you're well aware, you're about to be asked questions by Mr Mackintosh, who's sitting opposite, but before you do that, I understand that you're prepared to take the oath.

THE WITNESS: Yes.

Dr LINDA DE CAESTECKER
Sworn

THE CHAIR: Thank you very much. Now, we've scheduled your evidence for the morning. Possibility that it might spill into the afternoon. We will take a coffee break at about half past eleven, but if for any reason you want to take a break during your evidence, please just give me an indication and we can take that break. Now, Mr Mackintosh.

MR MACKINTOSH: Good morning. Thank you, my Lord.

(Questioned by Mr MACKINTOSH)

MR MACKINTOSH: Good morning, Dr de Caestecker.

A Morning.

Q Can I ask your full name?

A Linda Creighton de Caestecker.

Q I understand you produced a statement for the Inquiry.

A I did.

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

A I am.

Q Thank you. Now, when did you retire as director of public health at NHS Greater Glasgow?

A March 2022.

Q Thank you. What I was proposing to do is rather than simply walk through your statement, is to focus on the significant events that you were involved in and to ask you about certain issues that arise from evidence you've already heard and from the documents that the Inquiry has been provided with.

In your statement on page 6 of the statement bundle, in the answer to question 16, you explain at the top of the page, in answer to 16A, that you were:

> "… one of the non-clinical board directors who would hear and investigate Stage 2 whistleblowing

concerns."

I wondered how many such directors there were in 2018.

A In 2018, there were just two----

Q Right.

A -- but in previous times, there had been up to four.

Q Up to four. When did you start this role?

A When did I start that role? It was in 2014. I was first one of the directors that heard Stage 2 whistleblowing. I think around then I'd only probably heard one, had one case, and then I had a year's leave of absence when I went to work for an international charity, so it was really when I came back in 2016 that I had more cases.

Q I understand. There's something that I've noticed, which I wondered if I could get your broad commentary on. I do see this explained to some extent in the policy, but we've noticed that when you've produced your reports, and indeed other people have produced reports in the Stage 3 process, it's not always the case that the whistleblower receives the whole report. They receive an edited report or a letter that contained parts of a report. What sort of principles are you operating when you construct the letter, as it were, from the report?

A The reason for doing that is for confidentiality, that some whistleblowers want to be anonymous. That's not the case in these circumstances we'll be talking about, but when you speak to witnesses, we always say we won't attribute anything that's said to an individual. So we don't want people to be able to say, "Oh, I know who said that or I know who said that," so you summarise the report, giving the pertinent facts and explaining that the concerns were real, they were upheld or they were not.

Q Well, I'm sure we'll come back to that when we get to your report. I wanted just to check in with you about your understanding, your involvement. Did you have any involvement in what I understand turns out to have been a Stage 1 whistleblow by Dr Peters, Dr Redding and Witness 7 in October 2017 before it was raised to a Stage 2?

A I didn't have involvement in that and, in fact, when I interviewed Dr Redding, she didn't say that, "I've raised a Stage 1." Now, at that point in the policy, it was very common for people to raise their concern with their line manager, which is the policy, but it was very rare that somebody said to their line manager, "This is a Stage 1."

Q Right.

A So, often people would come to me and they would not have called anything formally a Stage 1. They either

had spoken to their line manager and still weren't satisfied, or they felt they couldn't speak to their line manager.

Q But I suppose, even if they hadn't called it Stage 1, would it have been a Stage 1 in the policy?

A Yes, yes.

Q Okay. Now, one of the things that comes out of the meeting on 4 October 2017 is an action plan, a 27-point action plan, and it went to various Board committees. I just wondered if you had any knowledge of it or you came across it in your work before Dr Redding's email to you in 2018?

A Not that I recall. I wasn't on the committees that this report might have gone to. As I said in my statement, as corporate directors, we would have regular meetings and there was discussion, but in a very high level about these concerns.

Q Okay. One of the things we've noticed – well, heard from Dr Redding particularly – is that she didn't receive a copy of the action plan until much later. It is part of her Stage 3 process and I'm wondering if life would have been more helpful if-- and certainly, she wasn't kept up to date on progress. Would it have been helpful if she'd been given it soon after it was written?

A I wasn't aware that she hadn't been given that action plan, so I can't

really comment on that----

Q Well, that's fine----

A -- but it would have been helpful. She may have felt then she didn't need to whistleblow.

Q Well, that's what I thought, but if you weren't aware, then I won't press you on that. What I want to do, however, is look at some preliminary issues in your statement. So if you go back to your statement and turn to page 7, we asked you in question C, so that's the top of the page, "Were GGC aware of these concerns?" If we look back on the previous page, we have defined them very, very vaguely as "concerns in respect to the built environment," so I appreciate this is quite high-level stuff.

One particular issue arises, which is, when you carried out the Stage 2 whistleblowing investigation, were you then aware, or did you find out at that time, that the number of air changes per hour in the general wards had been derogated or agreed to be changed from six – which is required by the guidance – to around three as part of the procurement process? Is that something you knew about during your investigation?

A I didn't know before, but when I asked people, "Why have we got the three air changes?" I was told then that that had been part of the-- I don't know if

the word derogation was used----

Q No, I'm not sure it is the right word. That's why I paused over it.

A It was part of the agreement in the build.

Q Did anyone give you an explanation for why it had occurred?

A No, and I didn't ask for that. Well, no, that's not quite true. People talked about it. It was about temperature control and that, with chilled beams, then the three air changes would be sufficient, and also with single rooms, three air changes would be sufficient, but I wasn't looking back. My whistleblowing wasn't about, "Why did this happen?"

Q No, I appreciate that, but I think you've probably been very helpful, so I'll leave that. However, question 17D – again, it's a very general question – asks you what steps were being taken to resolve issues, and you've given your answer by reference to the 27-point action plan. Now, you don't think it was part of your job to find out why there'd been this derogation?

A No. I saw this whistleblowing investigation as people coming to me to give me real concerns, which I accepted they were real concerns. Whistleblowing is when somebody feels, "I'm raising these issues and nobody's listening to me," or, "I'm raising them and there's no action being taken," or, "People don't accept they're real issues." Therefore, in whistleblowing, that's why they feel they have to whistleblow, so----

Q Was that the reason-- Carry on, please.

A I found out, or that was-- my conclusion was these were real issues. People that needed to know about them, the senior directors that needed to address and fix them, knew about them and actions were being taken to address them.

Q So, I take it that the source for that would have been one of the people you interviewed in the investigation?

A Yes.

Q Right. Are you able to help me about which one it was?

A A number of people, so both Tom Walsh and Sandra Devine told me about the SBAR that had been produced in the 27-point action plan----

Q No, what I meant was particularly in respect of the air change rate. Who would have been the source for that?

A Of knowing that it was three and not six?

Q And that it had been done as part of the procurement process.

A Mary Anne Kane, who was the then interim director of Estates.

Q Okay. We've had some evidence from Professor Steele that

there's no documentation beyond the very minimal documentation as part of the contract docs to explain how this was reported up to the Board, and there's no risk assessment. From your point of view, were you told by Mary Anne Kane what amount of information there was about this derogation, if that's the right word?

A No, but to be fair, I was not investigating that. I did not think this whistleblowing was about how did this happen, and obviously this Inquiry is about all of that, but I didn't feel that was what the whistleblowing concern was about.

Q So I wonder if we can, slightly out of sequence, look at the action plan itself, so that's bundle 20, document 48, page 792. What I want to do is-- this is a report to a committee. I'm assuming you weren't a member of clinical care and governance at that particular point?

A No.

Q No, but if we go on to page 794, we get the action plan itself, and if we go on to page 797, we get action 17. Now, the question that I'm wondering about this is that, if it's true, which I think it was, that in the left-hand column, that there are three air changes and chilled beam technology instead of the six air changes recommended, then would it not be necessary, looking forward, for the Health Board to ensure that it had assessed all the risks that arise from such a derogation? Would you agree with that?

A Yes.

Q Right, so did you look to see if there'd been a risk assessment of this derogation, again, if that's the right word?

A I did and I couldn't find one.

Q Okay. Now, it's part of the process, we understand, that in the construction of new buildings in the SHFN 03, part B of 2014, which is where HAI-SCRIBE comes in----

A Yes.

Q -- there is a requirement – again, I'm not sure that's quite the right word, but there is a guidance or requirement – that a Stage 4 HAI-SCRIBE should be carried out for new buildings. If you were looking for a risk assessment, did you find a Stage 4 HAI-SCRIBE at any part?

A No.

Q Was that something you would have asked for, or was it just you didn't see it as part of your work?

A I mean, obviously, when you're doing whistleblowing investigations, you're not an expert in many of the topics that you're asked to hear about, so you have to rely on the people you're interviewing to tell you, and that was not identified by the people that I interviewed

as something that we should have had and didn't have.

Q Thank you. Right. So, if we can go to the foot of page 27 of the statement bundle, when actually you're talking about the action plan, we asked you what actions were taken in terms of each issue and you've replied in the second sentence-- third sentence:

> "My role in the whistleblowing investigation was to ensure that there was a plan to resolve the issues and for it to be monitored through the appropriate governance processes."

Do you appreciate that-- how it might be thought that that row 17 and the action plan doesn't really resolve the issue of why the ventilation is three rather than six and what the implications are? Because the only action is to go and tell other people in Dumfries and Galloway. "Resolve" has quite a soft meaning, but do you see why there might be a point of concern that you're not really resolving that and the action plan doesn't really resolve it?

A Well, what I wanted to make sure was that that issue had been identified and that people were looking into how it could be resolved. I mean, as you know, there's been further work now on the isolation rooms, but in the main hospital, it remains.

Q Well, you see, that's the thing, is that there has been work in the isolation rooms and one can conduct a discussion, and we have, about whether that work was good enough, when it was done and so on and so forth. Lots of people have had lots of opinions about that, but the slightly stark reality for the rest of the hospital is it is what it is and it hasn't changed and there's been no risk assessment. So do you feel that the action plan, by (inaudible)-- the action plan doesn't do anything? It doesn't say, "We will look into this," does it?

A No, I-- and it doesn't at that stage. I-- you'll see in the report that I talk about the air changes.

Q You do, and I was going to come to that, but the action plan itself----

A Yes.

Q -- doesn't. Would you accept that doesn't resolve it in that sense of "resolve"?

A It doesn't resolve-- Well, it depends if-- whether people felt there was something to be resolved, but yes, it doesn't resolve that.

Q Well, we'll come to your comment on page 3 of your report because then that's worth looking at in detail. I'd like to look at page 12 of your statement, your answer to question 25. Now, it actually starts on the previous

page, so we'll go to the bottom of page 11, and we asked you, I think slightly out of the blue, because it isn't really covered by your whistleblowing reports completely--

Now, remember, you're nodding your head and shaking. There is someone trying to make a transcript, so, if you want to be recorded in your answer, please speak, but you've got your question there:

> "Both Dr Inkster and Dr Peters told the Inquiry they sought clarification on their remit as ICD on several occasions but were unsuccessful in obtaining this. What's your view on this?"

Now, you've given a detailed answer, and we can read it and have done. I wonder if we can go over the page and four lines down from the top. Perhaps not the most important issue is a sentence that begins:

> "In 2016, the infection control manager worked with the director of facilities, David Loudon, to produce a document on the role of IPCT on new builds and refurbishments."

Dr Inkster points out that it's her report and she's provided it to the Inquiry. We just didn't put it in a bundle. What's your source for that sentence?

A It will be from looking at documentation and emails and speaking to Tom Walsh. But you're right, it was Tom Walsh-- it was Teresa, Dr Inkster, who asked for that document and then, my understanding – but maybe there's more information somewhere else – was that Dr Inkster had agreed that document after David Loudon had produced it.

Q But you would just be reading the material you've got?

A Yes.

Q Right. Well, it's probably not the most important thing, but I thought I'd just double check. More, perhaps, significantly is if we go down to-- in this paragraph, do you see how halfway down the paragraph there is, in brackets, "QEUH/RHC"?

A Yes.

Q If you go down two lines, we then have-- you've got Rachel Green proposing a deputy lead ICD, and then you've got, "February 2018, Dr Green organised a programme of Organisational Development," and then we've got:

> "When Dr Inkster returned from sick leave in January 2018, she resigned from her role as lead ICD, citing a number of issues including that she now report to the Head of Microbiology."

You then discuss what you understand happened. Did you read or

have access to Dr Inkster's resignation letter from 2018?

A Yes.

Q Right. Do you think that paragraph, when you go into it in detail, really summarises her position as set out in the resignation letter?

A Not fully. I mean, I-- as I said at the start of that answer, I'm looking back at the paperwork in order to answer that question.

Q I see. Well, that's that. Probably all we need to do, because we've obviously heard evidence. We've had Mr Walsh on it as well, and I think possibly Ms Devine, so I'll move on. If we go on to question 26 and over the page, in the middle of this paragraph, do you see the sentence that begins with-- that line that begins, "Without reference to Dr Peters," about eight lines down?

A Yes. Yes.

Q Then it begins:

> "In my investigations into the whistleblowing complaints, it was reported by members of the IPCT that they felt that this step of multiple resignations was taken to destabilise/undermine the IPC service."

Now, are you talking about the 2017-- September 2017 resignations in that context?

A Yes.

Q Yes? What steps did you take to-- well, would trying to destabilise a service be a matter of some concern if carried out by a doctor?

A Absolutely, and what was reported to me in the whistleblowing was that people in the Infection Prevention and Control team felt very strongly that some of the ways that Dr Peters worked was, they felt, was quite undermining.

Q Well, that wasn't what I asked you about. I asked you about the suggestion that the step of multiple resignations, which involves more than Dr Peters, it involves a number of staff-- that those resignations was taken to "destabilise/undermine" the service. What's your source from the idea that the resignations of the multiple microbiologists was taken-- was done to undermine the service?

A My source is what was reported to me in the whistleblowing interviews.

Q You're a doctor. Well, you were a professional doctor for many years, and you'll be familiar with the idea that if you discover that somebody is acting improperly in terms of the GMC requirements, you're required to take steps and report that to people, aren't you?

A Remember, though, that this

was me interviewing people as part of whistleblowing, so you would need to do a much more thorough investigation in order to know whether or not that was a true remark. So what I recommended in the whistleblowing was that the then chief of medicine should do some work with the microbiologists and the infection control team to try and understand, is that the case, why would that be the case and how can they work more constructively together?

Q So we would find in your report at the time a suggestion that the microbiologists in 2017 resigned in order to stabilise the service? Would that be there in your report?

A I don't think it's stated in the report.

Q So what's your basis for saying it here in your statement to the Inquiry?

A When I went back and looked at some of my notes from the interviews.

Q So is it relevant to whether that has any merit that there was no steps taken to challenge feedback or challenge the microbiologists at the time about their conduct in terms of the suggestion they were destabilising the service? Is that something that you should have taken account of?

A In the whistleblowing investigation?

Q In reaching that conclusion, Dr de Caestecker.

A I wasn't saying that was my conclusion. What I was saying was it was reported to me by members of the Infection Prevention and Control team.

Q Let's move on to the next sentence:

> "At this challenging, difficult time for the IPCT, four of the senior nurses at the IPCT approached the Royal College of Nurses to complain that they were emailed frequently with queries and complaints by Dr Peters, and this was part of an active campaign to undermine the entire team."

You've repeated that in your statement. Those aren't the words you've used in your report. Your statement benefits from privilege in this Inquiry; it can't be relied on outside here. Now, the reason I'm asking this question is this: you've repeated that. Was any step taken by anybody at any time in 2017 to provide feedback to Dr-- to the whistleblowers that they were trying to undermine the service at the time? I recognise feedback was given about Dr Peter's emailing habits, but was there feedback given on the suggestion they were undermining the service?

A Do you want me to answer the question about the Royal College of

Nursing, that that was a matter of record? That----

Q No, no, I get that, but what I'm trying to work out is, did you discover whether any feedback was given to Dr Peters at the time and the other doctors who resigned?

A We asked-- as I've said, we asked Dr Rachel Green, who was the chief of medicine, to work with both the microbiologists and the Infection Prevention and Control team to look at these issues.

Q When did you do that?

A Just after the whistleblowing report was produced.

Q So, in 20----

A '18.

Q '18. What I'm trying to ask is, in 2017, other than the matter of emailing, was any feedback given to the three microbiologists, not just Dr Peters, on the basis that they should reflect on their conduct because they were seeking to actively undermine the IPC team?

A I-- I'm reporting this has happened as part of the whistleblowing, so I didn't know about it in 2017.

Q No. You're reporting in your report, in words that don't use this language, that there were issues reported to you in 2018 about the conduct of Dr Peters, and I get that and we're going to come to it.

In this section, you're telling the Inquiry that you've learnt that there were issues – serious allegations, I would suggest – about the behaviour of not just Dr Peters but the other two microbiologists who resigned-- well, three microbiologists who resigned. I'm asking you whether you found any evidence that by the time they resigned, anybody gave them feedback about their conduct.

A I can't answer that. I'm-- what I've written there was that was what was reported to me by the Infection Prevention and Control team.

Q Okay, right. Well, thank you for that. I'd like to look at a report that you said you read, which is Dr Stewart's report in 2017-- 2015, rather, which is bundle 14, volume 1, document 41, page 464. Now, you say in your statement that you read this report as part of preparation for your writing a whistleblowing Stage 2 report, is that right?

A Yes.

Q Yes. I just wondered if you can help me with paragraph 6. There's two questions that arise from it. The first one is Dr Stewart appears to be setting out two different perspectives on the problem he's looking into, so he's reporting two things. He doesn't say whether they're true or untrue. He just reports them, and it's in the second sentence:

"On the one hand, there are reports from ICDs having their professional authority undermined by the overturning decisions by the IC management team."

Now, that's in 2015 and that's the reports that he's acknowledging the existence of. Is that in some way similar to some of the issues being raised in the original whistleblow in 2017?

A That the ICDs felt their professional authority was being undermined?

Q Yes.

A Neither Dr Redding nor Dr Peters in the original whistleblowing said that specifically. They said they felt they'd been isolated because they were whistleblowers, but they-- and that they weren't being listened to, but they didn't use that type of phraseology.

Q Okay, and then the second sentence:

"… whilst on the other hand there are reports of ICDs not taking decisions when given authority to do so."

Is that not perhaps relevant to the issue that was raised in the Stage 1 whistleblow about people being asked to sign off things they hadn't been involved in?

A Can you-- can you----

Q So there's some evidence in the Stage 1 whistleblow-- one of the issues raised is that people are asked to sign off the completion of work that they haven't previously been involved in and they don't have-- feel they have the confidence to do. Whilst that may not necessarily be in the list of things that Dr Redding puts in her email, what I'm wondering is that these two sentences – both sides of the coin, as it were – to some extent, are they not touching on the same issues that underlie the Stage 1 whistleblow as well?

A They are that we needed to find or help both the microbiologists, the infection control doctors and the rest of the Infection Prevention and Control team to work more constructively together.

Q Okay. Well, what I want to do is then look at the final sentence, which is-- I'm just hoping that you might be able to help us understand what it might mean and what you thought it meant. So:

"Whilst it is clear that concerns for patient safety is the primary motivator for ICDs when arriving at decisions, there appears on occasion to be a lack of appreciation by some ICDs of the need to risk-assess decisions from an organisational/political perspective."

Now, you read that. What do you

think it means?

A I read that as meaning there may be issues that an ICD would say, "We need to close this ward," or, "Close this hospital," or take actions that were very specific for infection control without taking or-- but they also needed to take due consideration of, "Well, what does that mean for patients?" That might have unintended consequences or obvious consequences for patient care and patient safety, and all of their job is to bring these different risks and benefits together.

Q I appreciate that might be encapsulated in “organisational perspective.” What does the word "political" mean there?

A I wasn't sure what that word, "political"-- I suppose I read it as that same issue and also that we are-- as a Health Board, you have targets to fulfil and you get a lot of pressure to meet these targets, whether it's waiting times, waiting lists, whatever it is, and I presume they're bringing in-- that's what's being brought in. I didn't question that word, "political perspective,” when I read the report.

Q You don't think it imports-- and, to be fair to Dr Stewart, he couldn't remember what he meant at the time. Don't you think it imports some idea of reputational management from the organisation's point of view?

A In terms of what was meant by "political"?

Q Yes.

A I think reputational damage in this circumstance is important because your hospitals have to be safe, patients have to be safe, but also there has-- people have to-- who are having to go into hospital need to feel they're going into a safe environment where they'll be well cared for.

Q I want to just ask a question that arises from that: isn't there some sort of obligation to ensure that people are informed? Because there used to be a sort of paternalistic attitude and we see that in extremis in, for example, the infected blood scandal and that's something we see in extremis, but, "You don't need to tell people things, they'll just worry." That was a historical perspective many years ago, you'd accept that, in some parts of the health community?

A Yes.

Q Yes. Do you not see that, in a modern age, there's a need to actually be upfront with the problems you're facing and demonstrate that you're addressing them, rather than keeping them quiet?

A Absolutely, and by saying one needs to think about reputation of a hospital and a-- people who work in it, I was not meaning, therefore, you don't tell

the truth or you say something is safe when it's not. Of course, that would be entirely wrong to do that.

Q You don't, for example, if I can hark back to three air changes rather than six air changes an hour-- that the absence of actions around risk assessment is an example of an organisation not wanting to face up to a decision it's made?

A Well, we had to face up to that decision, as you know, because a huge amount of work – and you've heard about it – has gone in to making-- to improving the environment in 2A and in different parts of the hospital. So a lot of work has gone into changing things and, therefore, that does show that they've had to take it very, very seriously.

Q What work has been done to the ventilation system in the hospital outside 2A, 4B and the other isolation rooms?

A It hasn't, but that-- well, I'm saying it hasn't; as far as I'm aware it hasn't. There may have been other-- well, there was other work in the infectious diseases unit.

Q Thank you. I want to turn to your Stage 2 whistleblowing process. I'm assuming that it all starts with the email to you from Dr Redding on 7 May 2018, which is bundle 14, volume 2, document 87, page 72. At the bottom of the page, on the 8th----.

A I don't think it was 7 May. Yes, it was 7 February.

Q 7 February? My----

A 8 February.

Q That's me cutting and pasting in my notes, I'm sorry. 8 February. So that's the start, am I right in thinking, from Dr Redding?

A Yes.

Q Yes, and so I want to just check that you're comfortable that your statement in response to question 60 – that's page 29 of the statement bundle – is effectively you summarising what the issues that she was raising with you were?

A Yes.

Q Right, thank you. If we go back to bundle 14, volume 2 and we go to the bottom of page 74-- sorry, the bottom of page 73, do we see how we have, at the very bottom of the page, "My aims in following this whistleblowing process include..."?

A Yes.

Q Right, okay, and do you see that 3 is that, "Lessons are learnt so similar mistakes in the future can be avoided"?

A Yes.

Q Right. Are you comfortable that you investigated all three of these matters?

A I did not, as I've already said, investigate how did this happen.

Q So how can lessons be learnt if you don't investigate how it happened?

A Well, I was looking at where these important issues that Dr Redding raised in the whistleblowing: had they been accepted by the people that needed to work on them to change things, to improve things, where they'd be taken seriously and was action being taken? So, obviously, if I'd found they hadn't been, we would have had to understand, "Well, why not? What had happened that meant these concerns were not being addressed?"

Q Because one of the things that strikes me as odd is if you look up the page, item one, the first item she mentions:

> "The standard rooms at the QE and RHC should have 6 air changes per hour. No room meets the standard. There are only 3 ACH/Hr. This is clearly a breach of the standard."

The final word on that page-- I mean, I realise it's not a page, it's an email, is that "lessons are learnt." So are you effectively saying that your report doesn't attempt to demonstrate that lessons have been learnt around the decision to build the hospital at a-- at below the standard?

A No, it didn't. It didn't look at that and I, as I've said, was wanting to make sure that the concerns that had been raised were being taken seriously and addressed. I was not intending to, and as you can see I didn't, try and investigate how did-- how did that come about.

Q I mean, do you think it might have helped had you done so? I'll set out why-- is that this is early 2018. We know that, in late 2019, Professor Steele comes into post. One of his earliest actions is to conduct a review of the building and how it was procured. I know that's a very shorthand, but it covers within it how it was that the ventilation system ended up being what it was.

Now, he's found there's no documentation to justify it under-- other than those minimum material in the contract (inaudible). Of course, we're here in a Public Inquiry which, saving our presence, is taking time and costing money.

Do you think it might have been of some value had you, at the time in investigating Dr Redding's Stage 2 whistleblow, answered the question? Maybe it might have prompted the Health Board to act and do Professor Steele's work a whole year and a half earlier.

A I can accept what you're

saying, that it could have done that. I didn't feel, as somebody hearing Stage 2 whistleblowing, that I could investigate all of that and that, as I've told you, what I was trying to do and what I concluded, but you could also say that within the work from the SBAR and the action plan and all the people involved in that from Estates, from infection control, from clinical-- the clinical side, that was what I was-- that was for them to try and do and understand.

Q Well, I do appreciate that, but I think it shouldn't be thought that I'm ignoring the fact that there are 27 points in the action plan and there are lots of actions. That's clearly the case and many of those actions were dealt with relatively promptly, and it's now the Health Board's position that 26 or 27 have been done and the only one that hasn't been done hasn't been done because it's not possible and it's not the air change rate one.

So I absolutely accept that a lot of the action plan, or probably all of it, has been acted on in a way that there's maybe not too much disagreement about its effectiveness. Eventually, there might be an argument about timing, but it's been done. But Dr Redding raises a specific issue with you, and she asked for a specific outcome and you didn't investigate that?

A Not-- I didn't investigate in terms of, how did that derogation happen? How did the building get commissioned in this way with three air changes when that wasn't the guidance? I did not investigate that, and I didn't think that that-- I felt that what I was doing was making sure these important concerns were being addressed.

Q So I wonder what the-- well, let's look at the whistleblowing policy. So it's bundle 27, volume 4, document 3, page 45. Now, I appreciate that this policy has been revised at least twice since this and so the criticisms I'm making may not appear in the latest version, but I'm trying-- was trying to understand, as it were, your-- not quite your authority, but the task you were carrying out. Of course, you were doing it regularly, so you will know-- will be able to help me out. If you look in this policy, where does it say what the policy requires you to investigate?

A Well, there's the qualifying disclosures that are in-- that come from that Public Interest Disclosure Act.

Q Yes.

A Is that what you mean?

Q Yes, so if it's a case, and I recognise this is very much a matter of a debate and the Inquiry has yet to reach a conclusion-- but if it's a case that not having ventilation that is compliant with

SHTM 03-01 creates a risk of infection, one might imagine it is at least possible that it falls within the third bullet point, an act creating risk to health and safety. You'd accept that?

A Yes.

Q Yes, and if nothing's been done about it – perhaps a bit more of a stretch – you might see there's a concealment going on. Now, again, I'm putting it at the highest that you possibly can reach. So I'm just wondering whether you feel that your investigation covered everything that you were required to cover?

A I mean, if you're-- if the conclusion-- or you're asking me, should I have gone and looked back at how did this happen and why did it happen when it wasn't in the guidance, you are correct that I didn't do that. Now, if we're expecting Stage 2 whistleblowing at a Health Board level to do the kind of investigations and inquiry that this whole Public Inquiry is now doing, you would need to change the process of whistleblowing. We'd need to think, is it appropriate that a director who is not an expert in these areas and has another full-time job is expected to investigate?

Q I'm not suggesting that, Doctor. I'm suggesting that you could have said, "I can't find any evidence for why this was done beyond some talk about air-- temperature and other very brief issues. I think that a review should be carried out." I'm mentioning something within the scope of what Professor Steele did 18 months later.

So, if you didn't do it, you didn't do it. I mean, bothering you about it doesn't really achieve much anymore, but I appreciate your point that you didn't feel it was within your capabilities of time and available resource to do what I'm suggesting you should have done.

A Yes, and I also, at the time, felt these issues were being addressed through another process, so I didn't feel I needed to do that. Knowing what we know now and looking back, I can see what you're saying.

Q What I'd like to do now, then, is to look at the report itself. So the report itself is bundle 27, volume 4, document 6, page 81. So, firstly, am I right in thinking that the reason this report wouldn't have been sent to Dr Redding, and you just wrote a letter, was that you're stripping out the names of people you spoke to?

A Yes, and also there were issues about-- that people had talked about Dr Peters' behaviour. And obviously, this is a select sample, so it wasn't a full investigation into her in any way, but rather than going down any HR process or whatever, I was asking Rachel Green to look into this and speak to her

about it. So, I didn't want her finding out what some people were saying if she wasn't aware of it through reading this report.

Q Well, that's the interesting question. So, firstly, what's Dr Peters' status when she is at the meeting between you and Dr Redding? Because she comes to that meeting. Is she a Stage 2 whistleblower at that point?

A Dr Redding said-- she hadn't told me in advance, but when she arrived, Dr Peters was with her and I was very happy to meet with both of them, and they both talked about the concerns that you're well aware of. So, I did see her as a fellow whistleblower, yes.

Q Why do you think that the – using the term very loosely – failings or potential failings or issues around Dr Peters, which form a significant part of this document, are something that you require to investigate?

A I didn't investigate it and I wasn't required to investigate it, but in the interviews, it came out very strongly from the people I interviewed. People were very distressed and emotional at the interviews when they talked about it and were finding it very difficult, so I felt I had to report it in order that we could put some help and support in place.

Q But you didn't give any indication to Dr Peters in the letter that you sent to her or Dr Redding----

A No, I----

Q -- that these would be made.

A You're right, I didn't. I-- Because I wanted Dr Rachel Green, the chief of medicine, to speak to her about it in a more supportive way.

Q So if it's not relevant to the issues-- Well, is it relevant at all to the issues you had to report on?

A If people that I interview are saying, "It makes our work very difficult and we're very distressed by it," I felt it was relevant to----

Q Why is it relevant to the five issues listed on the top half of page 81 that Dr Peters sends too many emails or puts red underneath them?

A It was more than she sends too many emails. It was the way she was working with the Infection Prevention and Control team. And you're right, it's not part of the main points of the complaint, but both----

Q It's not part of any point of the complaint, is it?

A It's not part of them, but both Dr Redding and Dr Peters, during their discussion with me about the whistleblowing, raised the point that they found it difficult to work with the Infection Prevention and Control team, so they raised it as an issue first.

Q I'm assuming you would have

been aware that, at the time, Dr Peters was being annually appraised with no issues being raised? In fact, there's quite a lot of praise in her appraisals at the time.

A Yes, and you have to understand what medical appraisal is. It's a form of facilitated self-reflection, so you choose your appraiser. They might not even be in your specialty. It's about self-reflection. It's also to make sure that you're continuing with your continuing-- doing all your CPD, continuing professional development, that you're auditing your practice, that you're looking at outcomes.

It is meant to be a very supportive and reflective process, although, in some of the later appraisals, Dr Peters does talk about some of the difficulties in communication, relationships. She talks about toxic culture of working in the environment she was.

Q Indeed, she's given evidence on the Inquiry about that. Let's go back to the whistleblowing policy, which is bundle 27, volume 4, page 45, and I want to look at a particular section. I want to check whether you were taking-- operating under this policy. On page 46, the bottom of the page, paragraph 13.4.1:

> "There may be occasions when a concern is raised either an with an ulterior motive or maliciously."

Were you investigating this on-- Were you concerned that these whistleblowers are raising the matter with an ulterior motive or maliciously?

A No.

Q No? Okay.

A I said-- I thought they'd raised very important and real issues, and I said that to them.

Q Yes, and so what I'm wondering is you effectively-- you listened to some of the people in that meeting who gave you explanations, and many of them have given evidence to this Inquiry. You reported what they had to say into your-- Who receives the report, incidentally?

A The report goes to-- We had a non-executive director who was the whistleblowing lead. They're now called the whistleblowing champion. She would review it and then a summary would go to the care governance committee and to the partnership forum.

Q Did you discuss the draft with Dr Armstrong?

A No, I don't think so.

Q Well, let's----

A I can't-- I can't recall, to be honest.

Q Well, what I wanted to do was to look at bundle 14, volume 2, page 71.

So this is an email thread. At the bottom of the page, we have an email from you to Ms Haynes on 12 April 2018 and you needed a call with Rachel Green. Then Ms Haynes responds on 12 April saying, "Once you've spoken to Rachel do you want to [meet]... see what I can do to help?" Then, on 12 April, you ask for a meeting with Jen. I'm assuming that's-- Is that Jennifer Haynes?

A Yes.

Q So, is this a meeting with Jennifer Haynes rather than Jennifer Armstrong?

A Yes.

Q Okay, well, that's good to clarify that. So, one of the things-- Can we take that off the screen? Would you be aware that when we have received evidence about these events and what happened afterwards, the terms of your whistleblowing report have been relied on by the senior people in the Board to justify their criticisms of Dr Peters?

A I don't-- I'm not-- Well, I'm not aware of that because I don't-- If they were relying on it, it would be because they knew what people were saying and I had heard that at interviews. If someone was relying on that as the only source, I would find that strange if they hadn't experienced it themselves.

Q Well, what seems to happen is that the nurses who contact the Royal College, the emails, are mentioned a lot by people who are discussing Dr Peters, and the-- I mean, to be fair, I think you're the only person who's reported-- well, maybe Mr Walsh, if I remember correctly, I could be wrong-- who report the view that there was something sort of challenging about the decision of lots of people to resign in 2017, but these things get repeated.

Would you accept that there's a risk of your approach in putting this into the whistleblowing report and not telling Dr Peters about it, that it becomes just another blow, another bit of mud that sticks? It's never been investigated, but you've written it down in the report. It now becomes a document that we get quoted at us.

A But if you look at what I said in the report, it was, "I heard a consistent story of these issues" and, as I've said, people were very distressed and upset when I interviewed them and they talked about it. So, I-- You know, it's quite high level what I'd put there, and when Dr Green spoke to Dr Peters and was offering mentorship, coaching, organisational development, she will have known that that was from the interviews of the whistleblowing.

Q I appreciate that, but Dr Peters won't have done because Dr Peters replied to your letter in May and said she

was now content. Is that roughly right?

A Yes, from----

Q Yes.

A Yes.

Q Do you think she'd have replied in those terms if she'd known what your report actually said about her?

A I don't-- I don't know the answer to that because what I was reporting to her was, "The concerns you've raised, they've been taken very seriously and we're aware of actions that have been taken." At the same time, in the interviews, I had heard these disturbing reports of how people were finding interactions with her, and so I asked Rachel Green to put in a process to try and help with this.

Q Which involved not telling Dr Peters that you were doing this?

A I didn't say to her that she shouldn't tell her. I----

Q When she wrote a letter back to you saying-- email back saying, "I'm content with this now," you didn't write to say, "Well, you want to know I've just instigated-- I've listened to a bunch of people say bad things about you. I've written it down in the report and I'm now asking that your manager take it up with you." You didn't tell her that.

A Well, her manager would have told her that. That was what I asked her to do, but she will have done it and I think-- I hope Dr Peters would tell you the same thing, that it was done in a supportive way. It wasn't done, "Oh, this is all terrible and you're a bad person." It was, "How can we help you? How can we help the teams work better together?" That was----

Q Well, let's look at your report. We'll go back to bundle 27, volume 4, page 81. So you've described the background on the first page and, over the page, you've listed who you spoke to. So, we spoke to Dr Kennedy, who's given evidence to the Inquiry; Professor Jones, who is unwell, who hasn't given evidence but has given us a statement and he has said various things.

Mr Walsh gave evidence to the Inquiry. He's given us a statement. Ms Devine's given evidence to the Inquiry and she's given evidence in the form of a statement as well. Dr Green hasn't given evidence to the Inquiry. Dr Inkster has given evidence to the Inquiry, and Ms Kane hasn't yet given evidence to the Inquiry.

Now, you reviewed various documentation. Did you not review SHTM 03-01, the 2009 version about ventilation of hospitals?

A I did. I did.

Q Okay, right.

A So I'm sorry that's not listed.

Q Okay, and then you set out in

the findings, and you set out some-- the issues that were raised in the original process at the bottom of page 82. Then, at the top of page 83, you say a paragraph which I'm quite interested in. I'd like to understand a bit more about its source. So I've discussed this with Dr Inkster:

> "I discussed with the lead infection control doctor the 3 versus 6 air changes [and she accepts that she did speak to you about this]. The Scottish hospital building note recommends 6 air changes per hour."

That's correct, and then you say:

> "However, the infection control team consider the additional risk to patients in standard accommodation is negligible as 3 air changes brings contamination down to 5 per cent and it is single accommodation.
>
> There has been no transmissions of the higher-risk pathogens and there are now alternative pathways in place for the very high-risk ones, such as MERS and MDR-TB. The risk of aerosol generating procedures is reduced by advising to keep FFP masks on whilst in the room and for periods of time after end of procedure. 1 hour normally but extended to 2 hours in QEUH/RHC."

Now, what's interesting about Dr Inkster's comment on this is whilst the latter section from "… there are now alternative pathways" seems to arise from an SBAR she wrote in 2017 about the air changes-- Did you see that document?

A Yes. I'm on the wrong page, actually. I'm still on page 82.

Q Page 83.

A Thank you.

Q Sorry, yes. So, if we look at that first paragraph I was reading from----

A Yes.

Q -- the first sentence, Dr Inkster accepts that she did speak to you about this. The second sentence she accepts is true. I want to come back to the third one in the moment, but in the fourth one, "There has been no transmission of the high-risk pathogens to the end," she accepts that's, in a sense, a summary of an SBAR she wrote in 2016 about the air change rates. Did you see that SBAR?

A I'm not sure if I did or not. I don't think I did at the time. What happened with this was when the original report went to the whistleblowing champion, the lead non-exec, she did say, "You need to say more about the air changes."

So I had gone to-- and this was in the July, so it was later. I had gone to Dr Inkster and Dr Kennedy and Dr Walsh and said, "Can you help me with this?

Can you give me materials to look at or can you help me in the response about the three versus six air changes?"

I got a response on 10 July, I think it was, by email. It was from Dr Kennedy, but Dr Inkster was copied in, and it said that Teresa-- Dr Inkster and himself had discussed this and here were what they thought was a summary in bullet points. So I then wrote that in sentences. Perhaps I should have just left the original bullet points.

Q The reason I was about to ask you is that she maintains that the third sentence is entirely inaccurate and she wouldn't use the concept of five per cent, "brings contamination down to five per cent."

A Well, it was in the email and she was part of that. It was in the email that the first air change, each air change, reduces it by 63 per cent, then after three it's five per cent. I think CDC says rule of thumb is it should be less than one per cent, but the email said with single rooms, shutting doors, etc., then they considered the risk to patients who were not immunocompromised in the general hospital to be negligible.

Q Well, I'd be grateful if you can provide that email----

A I can.

Q -- to the CLO who represent the Health Board and they can disclose it to us. It wasn't included in your whistleblower narrative document. Is there any particular reason?

A Sorry, that I hadn't sent you that email?

Q Well, you prepared a document last year, or year before last, called the whistleblower narrative with lots of embedded emails. It wasn't in there. Any particular reason why?

A No.

Q If you could provide that to the CLO, I'd be obliged. Right, let's go on in this document. You've got paragraph 5:

> "Despite the legitimate concerns about patient safety raised by Dr Redding and Dr Peters, there were no increased levels of infection, and the recent prevalence survey showed that RHC had lower rates than the Edinburgh Children's Hospital."

Now, it seems from Mr Vine's evidence that the prevalence survey might have been in respect of hospital-acquired infections like E. coli and MRSA. Would that be relevant to the issues about the environment?

A I accept that what is written there is about the national and routinely produced data that was available. The point prevalence study and the indicators – E. coli, Staph aureus, C. diff – these

were the data that we had, and also surgical site infections, which were relevant more to the Institute of Neurological Sciences.

So, that was the information that was given which was the information that was available at the time. I take your point that since then, we know a lot more about the infections and it's not just the rate of infection, it's the type of infection.

Q Because this is a report that is dated May, but you were still writing it, you've just said, in July 2018.

A I only went back and change-- and added in about the air change.

Q So it's May 2018?

A Yes.

Q Right, so that would have been around the time of the water incident debriefing meeting.

A Yes.

Q So there would have been evidence of increased rates of infection, at least from some people's points of view, because there was a substantial Health Board response to a water incident in the Schiehallion unit at that point, wasn't there?

A I was reporting what had been the information that was given to me by the Infection Prevention and Control team about the risk of infection.

Q Could it have been from Mr Walsh or Mr Vine?

A It was from Sandra Devine, yes.

Q Okay, right. Let's move on the final processes. Dr Redding and Dr Peters have raised concerns they were not being updated on progress to resolve their concerns. Now, if it's the case they weren't being given a copy of the action plan or told it was being reported to the Board, that might be a simple issue; they just weren't being told what had happened to the action plan.

A Yes, and neither Dr Redding nor Peters raised that specifically, that they'd had the meeting about the SBAR and then not found out what had happened----

Q Because they wouldn't know there was an action plan if they hadn't been told, would they?

A No, but they might have raised the issue: "We had that meeting and then we didn't hear what had happened."

Q Could it be that some of the emails Dr Peters sent about that were treated-- fall into the "she's sending too many emails" complaint that we're about to get to?

A The issues that were raised with me were not about these. It was about not being invited to meetings or wanting to see a lot more information or providing results that the team already had but had to go and double check, so it

was these types. It wasn't that she was saying, "Has there been an update and what's happened since the SBAR meeting?" Because, yes, that these would have been legitimate emails and right for her to ask that question.

Q It's just the point that I'm-- well, I suppose to wrap up this point is that, up until about now, i.e. the summer of 2018, has there been a significant issue raised by Dr Peters about infection risk in the new hospital, whether in 2A, 2B, the cystic fibrosis wards or elsewhere in the hospital, which turns out not to be-- that's linked to the environment, that turns out not to actually be right?

A Not that I'm aware of, but these concerns were not about her being a whistleblower or not about her raising these important concerns. They were not about that.

Q Are you familiar with the concept, speaking colloquially, of playing the man, not the ball?

A Can you explain?

Q The idea that when you're faced with a difficult problem – I think it's probably a sporting metaphor, and I'm a terrible person to talk about sporting metaphors – but that you play the man, not the ball. You try and put the man down rather than deal with the issues.

You don't think there's an element here, of the way this has been repeated

to you, of people trying to deflect from the concerns that Dr Peters has accurately raised by drawing out a long list of flaws about the way she's behaving?

A I don't think that, and I don't think that because although we've talked about this and how difficult it was for members of the team, it hasn't stopped the actions being taken, it hasn't stopped her concerns being taken seriously, it hasn't stopped a lot of activity and actions to try and resolve them. So I don't think people have said, "These are not important issues, it's just because Dr Peters raised them." I did not find that at all, and that was certainly not my view.

Q Do you think it might have stopped her finding things out because she stopped getting replies to her email soon after this report was produced?

A I don't think she actually did stop getting a lot of replies. I know we've said there should be a way that if there's a lot of emails sent to the infection control team, they should be able to politely say, "This is being dealt with elsewhere," but I think, on the whole, they continued and do to this day, continue to reply to her queries.

Q So, if she's given evidence that they didn't, that would be something you wouldn't know about?

A If you gave me an example, maybe I could----

Q But you wouldn't have been involved in not sending a reply, would you?

A No.

Q So we'd have her evidence of what happened and emails, presumably, but you're just the person who's making the proposal with Dr Green that there be a policy in place?

A Yes. Not-- and probably wouldn't-- Yes, that we would give permission to the Infection Prevention and Control Team if they were getting a lot of these emails, which they talked about the numbers and the volume, that they would be enabled to at times say, "Look we don't need to answer this, Dr Peters, it's being dealt with by Dr Inkster or Professor Leanord" or whoever.

Q Because this whistleblowing doesn't come out of the blue. It's three years after the hospital's opened, isn't it?

A Yes.

Q So Dr Peters and Dr Inkster resigned or demitted their ICD sessions in the summer of 2018-- '15. They weren't permitted to do so. There was an investigation into culture then, and then Dr Inkster was appointed as lead ICD, then was off sick for nearly a year and a half, and various people resigned. In all that time-- and then this issue arises again in this email.

I'm just wondering whether the

cultural issue of whether people are responding to the issues being raised by Dr Peters is actually not part of the reason why it takes so long to find things out. The Health Board doesn't learn from its lessons. It's being told things; it doesn't act.

A That would not be my perception of this or my conclusions on this, but you're absolutely right. There seem to be long-running problems and issues that, with the best will in the world and with lots of effort, were not able to be resolved because we're still hearing about them years later in terms of the working relationships and the working together.

Q But in terms of the substantive issues that were raised about the building in the SBAR and in your Stage 2 whistleblow, whilst there may be a debate about when the Health Board addressed them, they needed to be addressed, didn't they?

A Yes.

Q Right. Let's go look at your reply to Dr Peters and Dr Redding on 4 May. That's on page-- bundle 14, volume 2, page 215. You list the issues, okay? Over the page, you describe what's to be done and you give some recommendations.

Now, this is Dr Redding's copy, I think, which is why I think the name

appears in the bottom left-hand corner, but what I wanted to see was, do you feel comfortable that it's proper to respond in these terms and not mention the issues that were raised with you about Dr Peters in the reply?

A Well, the recommendations do talk about the organisational development, mentoring support for Dr Peters and for the senior team and infection control team. So it does talk about that in the recommendations, but what I wanted was that Dr Green would speak, and I think she did-- speak to Dr Peters and discuss it in a supportive way, so----

Q You don't feel that by putting it in your report you somehow create something that can be brought out later on and used against Dr Peters' arguments?

A If I thought that people were doing as you say, focusing on the man and not the ball, I would say yes to that, but I don't think that is what happened.

Q Okay. What I want to do now is to move on to a small investigation that you carried out in 2019 in respect of the relationship between Dr Inkster and Professor Steele. Do you recollect this?

A Yes.

Q I think there might be a meeting minute, which is bundle 14, volume 2, page 400. Now, both of them-- if we go to the next page so we have the minute just appearing, or the page after that, 402. Yes.

Now, this is Dr Inkster's edited version, but I'll put that on the screen simply because both Dr Inkster and Professor Steele give the impression that the meeting didn't quite go the way they expected it to. I just wondered if I could understand, from your perspective, why were you holding the meeting?

A Dr Armstrong had called the meeting, and she may be able to give you more background when she gives you her evidence, but we were aware that there was a difficult working relationship or had been reported between Dr Inkster and Dr Steele. We needed them-- Maybe that's not quite fair, "difficult working relationship," but we needed them to work really well and really closely together. They were key people in the management of this incident and-- incidents, and they were working together on the incident management team.

So, we wanted to understand, what are the problems? Are there things we can do to help? And we put in place-- as you can see, asked them to have weekly meetings where they could talk about the issues and make sure that issues that have been raised at the IMT were being acted on. What I'd heard in the subsequent second whistleblowing was

people saying-- people around the table----

Q No, let's just focus on this. We'll come back to that in a moment.

A Okay.

Q But just at this meeting. So, effectively, what you're describing is the organisation requires these two people to work together. You're bringing them together. You're trying to resolve their differences and then hope they're going to work together for the benefit of the organisation. In essence, that's what it is?

A Well, find out what are their problems-- A.) are there problems? And B.) what are they and how could they be supported? Yes.

Q But both Professor Steele and Dr Inkster get-- for different reasons, get quite stressed about the subject of press leaks.

A Yes.

Q Now, Dr Inkster insists that she didn't speak to the press and, in fact, she had to refer repeated texts from a journalist to the head of HR, and Dr-- Professor Steele is very, very worried that every-- that he's being quoted in the press and he doesn't like that at all because he thinks it's wrong and there's inaccurate reportage and information's being revealed and it's undermining the operation, and so I-- we've heard both stories. I just wondered, did you try and address this press-leaking issue in the meeting and, if so, what was your sort of intention, even if it didn't work?

A We weren't asking-- I'm not-- as I recall, we didn't specifically say, "Did you leak things to the media?" I think both of them reassured us that they hadn't and-- but we'd had a media enquiry about allegations of bullying and it was implied it was between infection control and Estates, and so we wanted to know, "Is this an issue that you're aware of and is there something here we need to do to further address?"

Q Okay, thank you. Well, what I'll do is move on to – take that off the screen, please – the events of August 2019. Now, ultimately, we'll discuss in a moment a meeting you held on 20 August, which discussed the change of IMT chair, but I want to understand a little bit more about how you got there, and we'll start with you and then we'll bring in everyone else. So, there's obviously been this tension back in March. There's been this meeting we just discussed. You're not an IMT attendee?

A No.

Q No, so when do you first have anyone speak to you about the possibility that the chair of the IMT should be changed?

A It didn't happen quite like that.

After the meeting on 14 August, there had been a----

Q That'd be the IMT, not at that day?

A The IMT, sorry.

Q Yes, right. Yes.

A The IMT meeting, then. There had been feedback, not to me personally – I hadn't heard any of that feedback – but to Dr McGuire from the clinical nurses, to Dr Armstrong herself, to Sandra Devine, that it had been a very, very difficult meeting, and the way it was described was very extreme: "off-the-scale bad," "toxic," "I feel intimidated," "I never want to go back to an IMT," "the body language was terrible."

So, getting that kind of feedback from such an important IMT as this one caused Dr Armstrong to come and speak to me and say, "Look, what can we do about this? We need to talk about this."

The Scottish Health Protection Network guidelines say that if an IMT is not working well, the director of public health can intervene, and so we thought, "Well, let's get people together and talk about what we can do to better support this IMT." Because you need a very, very strong chair in order to manage difficult behaviours in any meeting, and so we called the meeting on the 20th and I agreed, at Jennifer's request, to chair it.

Q Well, we'll come back to (inaudible) in a moment, but that's very helpful.

A Okay.

Q I just want to draw a few things out from within that. The process, though, did you speak to Professor Steele on the 14th?

A No, I didn't have any of the feedback personally, although I have thought about this and I wonder-- I think I maybe-- when I heard from Dr Armstrong about the feedback she was getting, I think I may have spoken to Dr Kennedy, who was in my team, of how he had found----

Q Professor Steele didn't come and speak to you?

A No.

Q Okay. Sandra Devine was, of course, at the meeting.

A Can I just go back to that? Professor Steele will have spoken to Dr Armstrong, though. We're all in----

Q You're all in the same space because----

A Yes, yes, but he didn't speak to me.

Q -- the way it's been described-- the impression I'm getting – and stop me if I've got this impression wrong because it's just a sort of fuzzy feeling at the moment – is that the meeting takes place over in the Level 9 seminar room and it's a twelve o'clock meeting, so it will run on

for a few hours. It's mid-afternoon. That sound about right?

A Yes.

Q Yes, and then people come back. Now, Professor Steele works near you?

A Yes.

Q Does Sandra Devine work near you?

A No----

Q No.

A -- but she's often in and out the office.

Q She's often in and out, yes, and Dr Deighan would have worked near you?

A He did, yes.

Q Right. Would Dr Kennedy have been located near to you?

A Not in the same building, but near.

Q Yes, so what I'm wondering is that when you say you've received this feedback, and you've described it in exactly the same terms as some of the witnesses who were there, you're receiving it from the people whose journey from the meeting is to come back to your building. You're hearing from Tom Steele, Sandra Devine, Dr Deighan, Dr Kennedy. You're not hearing it from the other members of the IMT. Would that be fair?

A No, I didn't get any of that feedback directly.

Q Right.

A They spoke to either their line manager-- so, some of the nurses had gone to Dr McGuire or they'd gone to Sandra Devine or they'd gone-- I presume, Chris Deighan went to Dr Armstrong. None of them came to me directly.

Q What nurses, Dr de Caestecker? Can we look at the minute from the IMT? Bundle 1, page 343.

A Is Emma Somerville not a nurse?

Q So it would have been Emma Somerville?

A Yes.

Q Okay. We haven't spoken to Emma Somerville, but we'll add that to the list. So Emma Somerville would have provided feedback to Sandra Devine, you're saying?

A I can't be certain about this. I think she provided-- or what Dr McGuire said to me was the nurses who'd been there contacted her.

Q Right, so you don't know for sure it's Emma Somerville?

A No, I don't.

Q Okay, right. But, if I get this right, only Emma Somerville, Sandra Devine and Ms Rogers – apart from, obviously, Annette Rankin, who doesn't work for the Health Board – they're the

only nurses on that list, unless I'm----

A Yes.

Q Yes, okay. Well----

A I'm not sure who Angela Howard is.

Q Now, if we take that off the screen. So you get your information from Dr Armstrong, effectively?

A Yes.

Q Do you get anything from anyone else?

A Not before the meeting.

Q Not before the meeting, no. Do you get told by Sandra Devine of the conversation she's had with Dr Inkster?

A Not at the time, no.

Q Not at the time, no.

A But she did say at the meeting that Dr Inkster had also said it was, she used the word "dreadful". I don't know if that's the word that Dr Inkster used, but that it had been a dreadful meeting and we also know now, which we didn't know then, that Dr Peter whistleblew to HPS about how difficult that meeting had been the following day.

Q Yes, because at the time you hold your meeting. Now, before we hold the meeting, let's look at the invitation. So it's bundle 14, volume 2, document 144, page 568. So this is the invitation. What's this an invitation to?

A It's to the meeting to discuss how we better support the-- or about the working of the IMT. I----

Q So why doesn't the abbreviation "IMT" appear in the email?

A I actually can't answer that. I take it. I accept it's vague. Dr Armstrong had drafted that invitation. I had agreed it. I maybe didn't look at it closely enough, but what I do know is that everyone invited to that meeting did know what it was about. We weren't trying to invite them to a meeting and it was going to be about something different. I think it was deliberately-- maybe it was vague----

Q Deliberately vague?

A -- so not to presuppose the outcome of the meeting.

Q Well, because it does. How would you react to the suggestion that the meeting was a presupposed outcome?

A Sorry, repeat that.

Q The outcome of the meeting was inevitable, wasn't it, Dr de Caestecker?

A No, not from my point of view. I was the chair of the meeting and I wanted to think-- to consider how could we better ensure this IMT was working there, was working well.

Q But why isn't Professor Gibson invited?

A Clinicians are very, very busy people. They were already finding this whole process was taking up a lot of their time. We didn't consider-- we didn't talk

about whether we should invite the clinicians. The feedback we'd had was consistent that it was a very difficult meeting.

It was not a meeting to say, "Is Teresa Inkster a good or a bad chair?" It was not asking that question. It was saying, "How can we make this meeting work well?" and we, as senior directors on the Board, have a responsibility to take difficult judgements and difficult decisions, and that's what we were doing at this meeting.

Q Because it's all a surprise to Professor Gibson, isn't it? That was, I think, her evidence last year, and that's what happens at the meeting: she's surprised. Dr Crighton records that in her statement. Is it a good idea to have your lead clinician, responsible for the patient cohort who you are attempting to address concerns about infections that affects them, not to be consulted about this process?

A Could I explain what happened----

Q Yes, of course.

A -- after the meeting? That we'd had the meeting and the rationale for changing the chair was it-- Certainly, when we have public health IMTs, if it's a very-- if it's a difficult IMT and it's complex, we would have a separate chair than the subject expert. Dr Inkster was the subject expert.

She needed to present data. She needed to bring information. She needed to be thinking about the investigation. To also manage what we've heard were difficult behaviours and different views-- it was not a reflection on her as a bad chair. It was saying that's almost an impossible task for anybody.

Q Because, the way that-- Go ahead.

A And in terms of Dr-- Professor Gibson finding out, what happened was, Teresa was-- Dr Inkster was meant to be at that meeting. I then found out late in the day she was off sick, but we decided we should go ahead with the meeting because it was such an important IMT. There were so-- It was vital we kept it going, so we went ahead with the meeting.

What I was told was that Dr Inkster was still off sick on Friday when there was going to be an IMT, so Sandra Devine had spoken to all the ICDs and said, "Can one of you chair this meeting, because Dr Inkster is off sick?"

We would not have changed the chair without speaking to Dr Inkster and letting the rest of the IMT know, "This is what we're doing. We're doing it in order to support the IMT. We hope Dr Inkster will still be at the IMT as a very important contributing member, but we've got

somebody separate chairing it to make it work better." What I didn't know, and I don't think Dr Crighton knew, was that Dr Inkster was back from leave that day. We would not have had it play out in that way had we known.

Q But it did play out that way.

A It did, and I'm----

Q There's no email from you or Sandra Devine or Dr Armstrong to Dr Inkster saying, "I'm sending you this email conscious that you're on sick leave because this meeting is going ahead on Friday. I'd be obliged if you phoned me," or, "This is the reason," or, "Here's a copy of the minutes." None of that happened, did it?

A I thought it did. I thought that Sandra Devine had spoken to Teresa, and also that she had the minutes of the meeting. I'm not sure when she got the minutes of the meeting, so I shouldn't say that. I'm not sure, but that Sandra Devine had spoken to Dr Inkster, and I also offered to speak to her, but it was felt it was more appropriate for Sandra Devine to speak to her. Because I wanted to say, "This is not us saying you can't be the chair and you're not any good at it." It was saying, “We want to make this IMT work well,” and----

Q So, just to be clear, there was no suggestion, as far as you understand it, that there was a desire to remove Dr Inkster because of the decisions she was making in the IMT?

A Not from my point of view as the chair of the committee.

Q You were never told that by anybody else?

A What was described at the meeting, and I----

Q Well, let's look at the minute while we talk about it.

A Okay.

Q It's bundle 6, page 70. So we'll come back to you-- Well, just continue and we'll pick up the other questions when we've heard the end of your answer. What were you were about to say, at the meeting?

A At the meeting, I can't recall exactly who was saying it. It may well have been Dr Armstrong and she can talk about this when she gives her evidence, that there were some concerns about some-- I don't quite know how-- what the wording would be, but Dr Inkster continuing to look for other causes and continuing to investigate when things were already in train--

I'm not phrasing that very well because I wasn't part of the IMT. All I can say is that, sincerely, from my point of view, it was to say-- and we say this in the subsequent whistleblowing, it is a very difficult role to play, to chair a difficult meeting and be the subject expert.

Q There's nothing in that minute, is there, about anyone having any view that Dr Inkster is investigating things when things have been put in train, as you just put it, is there?

A I think that you would need to speak to Dr Armstrong about that. I----

Q I'm going to.

A Yes.

Q But what I want to know is, this minute was produced by the Inquiry-- for the Inquiry some time ago. It was included in bundle 6. It was available when Professor Gibson gave her evidence, for example.

There's nothing in this minute that describes what you might describe as a substantive reason to change the chair. All there is-- and there's discussions about whether it's merited, but all there is is a lot of discussion about behaviours, about tensions, about management issues around the important-- around the chair, and we can-- we'll discuss those in substance in a moment, but there's nothing here saying, "This IMT chair is, as it were, substantially going down the wrong evidential route," is there?

A No.

Q No.

A And that wasn't my-- As chair of the meeting, as someone who wasn't directly involved in the IMTs, I did not have that opinion, necessarily.

Q Because, effectively, if we just look at this, you have-- you're absolutely right that you say it's a decision largely made by-- You said it was a decision made by senior executive members. Why is Dr Kennedy there?

A Because he had-- because he was the most senior person in public health that had-- was involved in the process.

Q What about the most senior microbiologist who'd been involved in the process? Why isn't she there?

A Well, she was invited, but unfortunately----

Q No, not ICD. The most senior microbiologist at the meetings-- meeting was Dr Peters. Why isn't she in the invitation?

A Why wasn't who?

Q Dr Peters. So you've chosen to----

A Well, she wasn't a member of the IMT. I know she had come along to that last meeting.

Q Well, that's an interesting question. Perhaps the last question before our coffee break. People would come to these IMTs, and it seems to be a consistent feature back into early '18, quite high up in the organisation because they're sent by Dr Armstrong. Dr Kennedy goes because he's sent by Dr Armstrong, Dr Deighan goes because

he's sent by Dr Armstrong and there's-- Dr Deighan is a deputy medical director, so I get that. Dr Kennedy is sent because you are requested to provide public health support, do you remember, in 2018?

A Yes, yes.

Q Dr Peters is present at the IMT because the lead ICD has invited her to attend along with Ms Harvey-Wood because, at a previous meeting, according to Dr Inkster, her views on the microbiology issue have been challenged by Professor Steele and she feels she needs some microbiology support because the science is important. Did you know that at the time?

A I knew that Dr Inkster had invited Dr Peters and it is entirely reasonable to say, "We want another microbiologist at the meeting." We would certainly do that in public health if you wanted other people to come in and provide support. Usually you would take, you know-- tell the group that that's what you were doing.

Q Because what I'm trying to get across is this is-- this meeting could be-- and it might have a different status that was purely senior executive board members, but it isn't, is it? It contains people other than them, and that's why I still don't understand why you're not trying to obtain the views of the other people present at the IMT.

I'll put to you that what this meeting does is obtain a partial perspective from what, effectively, is seen by others, including the clinicians, to be one side of an argument. Would you accept that?

A No, I wouldn't accept that because what I was wanting to do in this meeting was make sure that a really crucial IMT was working well, and the feedback we'd had was it was very difficult, it wasn't working well.

So the way I would like to have seen this happen afterwards is we had a proper discussion with Dr Inkster when she was back from sick leave, that she would have remained a member of the IMT but with a very experienced chair of meetings so that she did not have to take on that role of managing the meetings as well as being the subject expert.

Q Can you remind me what you told Dr Crighton about the meeting before she took over?

A Well, the problem with looking at that discussion was-- if you remember, what I said was on the Friday there was an IMT and we thought Dr Inkster-- or Sandra thought Dr Inkster was still off sick, so she'd contacted the ICDs to say, "Can anyone chair the meeting?" None of them felt they could, so Dr Armstrong had come to me and said, "Can someone

do it from public health?"

And so I'd contacted both Dr Kennedy and Dr Crighton and said, "Can one of you either chair the meeting or go to the meeting I've got in the diary and I'll chair it? It's because Dr Inkster is off sick and these have been quite difficult meetings."

Q Well, let's look at the email: bundle 27, volume 13, page 52. (After a pause) Bundle 27, volume 13. Page 52.

A Oh, yes, it's the wrong----

Q We have got too many bundle 27s in this Inquiry. It's part of the problems. Thank you. This is your email. So you've just described the email to Dr Kennedy and Dr Crighton:

> "We need a Public Health consultant to chair the 6A IMT tomorrow morning. The last meeting went badly due to difficult behaviours, people are anxious and uncertain. Ian has a major input for the meeting, so it's hard for him to chair. I have a meeting on drugs deaths. Emilia, can you either chair or go to the drugs meeting?"

There's nothing in that about Dr Inkster being off sick, is there?

A No, there wasn't, but----

Q Well, you just said there was a moment----

A -- neither is there anything in that email saying, "Emilia, you're now the permanent chair of the meeting," because I wouldn't have asked her to do that until Dr Inkster had been spoken to. So you're right, it doesn't say Dr Inkster's off sick and it should have, but I then followed that up with a phone call, and I'm sure in the phone call I would have said, "Dr Inkster's off sick."

Q Well, Dr Crighton says she doesn't remember a phone call from you.

A Did she?

Q She wasn't able to help us with anything in terms of background information.

A I thought she said that it was done by phone call.

Q Well, I'll check over the coffee break, and it's probably a good idea before I pick you up on something that didn't happen. My Lord, this might be a good time to have a short break.

THE CHAIR: As we've explained, we take a coffee break about this time. Can I ask you to be back for five to twelve?

A Yes.

THE CHAIR: You'll be taken to the witness room.

(Short break)

MR MACKINTOSH: My Lord, I've received a couple of Rule 9s already, so

what I'm proposing to do is take about 25 minutes for the witness and then have a short break at that point.

THE CHAIR: Just give me that again. Taking a break at what, half----

MR MACKINTOSH: Half past, I said.

THE CHAIR: Half past, yes. Okay. (After a pause) Mr Mackintosh?

MR MACKINTOSH: Doctor, so I checked the notes and you are correct. Dr Crighton did describe receiving a phone call from you on the-- before she chaired the IMT on the 23rd in which she mentioned that a doctor-- you mentioned that Dr Inkster was off sick.

So what I wanted to do was just finish off with a couple of questions around the IMT, and then I also need to go and check something in our transcripts from the last hearing about Ms Somerville and Ms Howat's evidence because they gave evidence last year----

A All right.

Q -- and I'd forgotten that. What we'll do is we'll go on to about half past. Then we'll have a short break so I can do that, and then we'll see if there are any more questions. So just focusing on your statement about the IMT change of chair. If we go to page 45 of your statement bundle, question A at the bottom of the page, "Please provide the reasons for resetting the IMT process having an independent chair." Now, what I wanted to understand, firstly, is two things about this, your answer. So you've explained it, as I think you've already done, that:

> "I recognise that chairing such a long-running, important, high-profile IMT is very difficult. It can be difficult if the chair is also the subject expert."

So, this IMT had had, what, six meetings by this point?

A I think so, yes.

Q Yes, and there'd been IMTs the previous year around the water incident. You're presumably aware of those?

A Yes.

Q There'd been IMTs around the Cryptococcus cases?

A Yes.

Q Yes. I'm assuming those would have been quite-- they were quite long-running and they were quite high-profile and quite important. You'd accept that?

A Yes.

Q Were you made aware of any issues around behaviour in those meetings at the time we have 20 August meeting that we're just talking about?

A Obviously, although they were all separate IMTs, they kind of merged into one, so the point was, Dr Inkster had

been chairing complex, difficult IMTs for a long time by then. So, you know, that can't have been easy.

At the meeting that you're referring to in August, there was not discussion of previous IMTs, but when I did the subsequent whistleblowing about support for the chair and the IMT, a lot of very practical issues came out. Some of them actually did come out in the meeting of the 20th, people saying, "We don't have good practical support. We don't always have a good room to meet in."

Q Yes.

A "There's different people coming and going out, and sometimes the minutes aren't as accurate as they need to be and then there's lots of changes." And a chair needs to be able to solve these issues in order to ensure the IMT is running well, and we make recommendations for that in the whistleblowing report.

Q Indeed, and we've read those, but I suppose the question that arises from that is that if one does see it as, to some extent, one IMT – I mean, it isn't, but I can appreciate how I certainly first saw it as one when I read the material, and you're describing it, it does rather merge together – one conclusion might be that, for the best part of, at this point, a year and a half, Dr Inkster had been chairing IMTs in respect to the Schiehallion cohort. It was only towards the end of that period that these behavioural issues emerged. Would that be a fair description of the circumstances?

A It was certainly the way it was presented at that meeting that the more recent meetings had been particularly difficult. What I heard in the whistleblowing was that often members of the IMT were becoming-- “more defensive” was the way it was described. They had done a lot of work, put things in place. The issues still weren't resolved, so there can be tension around that. Not through anybody's fault, but just as these things develop, I think the way people were feeling meant that behavioural-- or the way people interacted in the IMT was more challenging.

Q There were points in 2018 when they'd done things and they didn't seem to work, weren't there?

A Yes.

Q There must have been lots of tension all the way through, with the infections and patient issues and the harm that patients were suffering? It must have been a tense time the whole time, pretty much?

A It was presented to me as if some of these tensions were getting greater, probably because things were going on for a long time. There was

increasing complexity. There was concern that, “Are things still not solved?” So I can understand why tensions and emotions might be higher as the process went on.

Q Was it presented to you that there wasn't actually-- that there'd been the main step of putting chlorine dioxide in the water, that there'd been the main step of decanting the patients, there'd been the main step of fitting the filters, and that really the problem was sort of fixed and the tension was around whether there was still a problem? Was that part of the way it was put to you?

A I don't know if it was put to me at that meeting like that, but I'm aware that is part of the debate.

Q Yes, because, in simple terms, could it be that the reason there were tensions was that, in the summer of 2018, Dr Inkster particularly, as the chair, was presenting hypotheses about chilled beams, condensation from them and their water supplies that were new, and that the Estates department, particularly Professor Steele, didn't feel those concerns were justified? So there's a tension, in a sense, around a hypothesis? Could that well be what, in essence, was the biggest driver of tensions in August 2018?

A I wasn't at the IMT, so I couldn't say that was the biggest driver of the tensions, but that would certainly-- If you've got some people saying, "I don't think this is a problem," and you've got an infection control doctor saying, "Well, I think it could be and I want to investigated," that could be a tension. But I think, for me, that reinforces the need to have a separate chair who's able to find conclusions on investigating further or getting to some consensus.

Q How do you react to the suggestion that if one-- if that is part of the story, that for the meeting you chaired on 20 August to remove Dr Inkster as IMT chair is in fact, to some extent, picking sides on that dispute, and getting involved in the substantive issue that was before the IMT whilst dressing it up as a question of culture and behaviours?

A I'm very sorry if it was perceived that way. I know that I, as chair-- that was not the attitude I was taking. I was not saying, “There's a debate here. We support this, therefore we get rid of Dr Inkster."

What I had hoped would happen was that Dr Crighton would be there chairing the IMT, a very experienced chair of meetings, Dr Inkster would still be on the IMT – I didn't know at that point that she was going to resign – and that she would be able to make her case, put forward her data, have the debate in a way that was more manageable because

she was not having to also look at all the other behaviours and chair the meeting, which was a difficult meeting. So, I didn't see it at all, and my integrity as somebody chairing the meeting would-- I was not taking sides.

Q Because the problem is that she did resign.

A I know.

Q To what extent do you feel the way that this change of chair was handled – not just by you, but by Dr Armstrong in asking for the meeting, the meeting itself, the way that Ms Devine communicated, the happenstance that Dr Inkster was off sick with a respiratory virus for much of the week before the meeting – that all these circumstances together conspired to make Dr Inkster think that, effectively, this was the same issue that Dr Stewart had investigated back in 2015, that she was being challenged on her scientific, substantive knowledge and being undermined by the Health Board?

A I completely understand that that set of circumstances at the next IMT – where we thought Dr Inkster was off sick, I was asked urgently to find a chair for that meeting and it was Dr Crighton, and Dr Inkster, unbeknown certainly to me and I think to Dr Crighton, was actually back from sick leave before there had been that opportunity for a conversation – I think that is unfortunate, and I can understand how Dr Inkster would think that was not the best set of circumstances.

On the other hand, I hope that she would have then discussed it with Sandra Devine and Dr Armstrong. She could have-- I offered in an email that she could come and discuss it with me so that we could say, "This was not about you." She said something about, "Oh, it was commenting"-- the minutes were commenting on her behaviour. It was not her behaviour that was being commented on.

Q Whose behaviour was it, then?

A It was the behaviour of the group. I'm not pinpointing individual people, although a lot-- a number of the people at the group talked about the body language and the challenge or the response from Dr Peters if there was a challenge to what she was saying. But I think there were-- it was probably more than just Dr Peters.

Q So is this the incident which Professor Steele describes where Dr Peters put a finger up to say, "No cases" about Great Ormond Street?

A I didn't know about that until he said that in his evidence. No, that didn't come up, but people did say that if-- they felt they couldn't challenge Dr Peters, that she-- they felt intimidated such that some

people were saying, "I don't want to go back to the IMTs," so-- But I'm not saying it was all Dr Peters.

Q Well, yes, I know that, but this is another report-- document that you've had part in altering which sets out allegations against a microbiologist infection control doctor in the hospital without giving them the opportunity to have their say. Do you see there's not a bit of a theme there?

Because you've done the same with the whistleblowing report at Stage 2. You've described Dr Peters' faults at great length, and now you're reporting-- "I'm only reporting..." is your line. "I'm just reporting what people say..." with no detail and no names. You've done it again, Dr de Caestecker. That seems to be a repetition with you, isn't it?

A I don't accept that, but just explain what-- when you're talking about-- I've explained what happened about the initial whistleblowing, but what are you talking about there? Are you talking about the minutes of 20 August or----

Q The minutes of the 20th----

A -- the second whistleblowing?

Q -- and what you've described to me is you giving evidence or writing in a report second-hand information----

A Yes.

Q -- that you've accepted, I would suggest, without thinking that there may be an alternative explanation for it, or another side to the story, and you've set it out in your evidence today and in your statement, and it appears in this minute.

The same thing happens in the whistleblow Stage 2 report, but this time it's about Dr Peters. You've heard stuff, you've set it out in the minutes, you put more inflammatory information in your statement, and I'm just suggesting that maybe you're just accepting other people's positions without really inquiring into it properly.

Because we've heard evidence from all these people, so we know about the body language of Dr Peters because Professor Steele has told us. What you do is you report it. You put it in black and white and then it becomes something that can be used as evidence. Do you get that?

A I do get that, but if I put anything like that in my statement, I always said, "It was reported to me." I haven't said I saw that or I experienced that. The fact that these reports are over quite a long space of time and very consistent----

Q Well, are they?

A -- I think must tell a story.

Q Let's look at Dr Peters' appraisal from 2019. So this is bundle 27, volume 9, page 491. So Dr Peters, this is her Stage 4. I mean, you

presumably had your Form 4 done yourself when you were a doctor, before you retired?

A Yes.

Q Yes.

A And mine are equally glowing.

Q Well, let's see who wrote it. So you reported to Rachel Green in 2018, May 2018, your-- what had happened, what you'd been told about Dr Peters' behaviour. That's what you said in this Inquiry.

A Yes.

Q Yes. Let's look at page 492. Let's see who the appraiser is. It's Dr Green.

A Yes.

Q So she's now doing an appraisal about a year later.

A Yes.

Q You see that? Well, if we go on to page 494, do we see the section on "Communication, partnership and teamwork"?

A Yes.

Q

"This is Christine's revalidation year and so she's completed an MSF. As she does not have a contact with patients, no patient questionnaire is required. Her MSF was outstanding."

I appreciate you do, to some extent, choose who your multi-source feedback sources are:

"She obviously is a well-respected colleague across many clinical areas. She is reflective on comments and will look at how best to prioritise her various commitments and reflect on how to maintain good input to clinical teams. She's not been involved in any complaints or critical incidents."

Now, would you agree with me with this submission that that report is of similar weight, less weight or more weight than what's in the Stage 2 report from you?

A It's a very different process. As I've explained, the medical appraisal is a self-reflective process, it's supportive, it's to help people reflect on their own practice and if there's any issues about-- you know, to reflect on it themselves. As you've said, you do choose who gives you your multi-source feedback, so----

Q But Rachel Green approved this, didn't she?

A She doesn't have to approve who----

Q No, but she approved the-- she signed the form.

A She signs the form----

Q Right, so are we going to have to call Rachel Green back to give evidence to find out this, or would you accept the following: if----

A I accept the appraisal because

it's for a different purpose. It doesn't-- I don't know what the conversation was between Dr Peters and Dr Green, whether Dr Green at that point said, "We're having this organisational development. How are you finding it? Why do you think we've got it?" I know it comes out in subsequent appraisals that she talks about the organisational development and going through it and her problems, some of the issues that she's experiencing.

So I don't know what was discussed. It is-- you know, you write a report, but maybe some of these things were discussed. You would need to ask Dr Green, but I don't find these things incompatible. Dr Peters is a well-respected microbiologist – nobody's questioning her clinical practice – but what I was reporting on were consistent reports over some time by a number of people about these behaviours that people found very difficult.

Q So what I'm putting to you is that what you've been doing in these two events – that is the Stage 2 whistleblow for Dr Peters and this 20 August process for Dr Inkster – is that you've been accepting the views of a minority or a particularly chosen subset of people, setting them out in black and white, and giving them status and authority, which is then used by others to criticise the doctor

involved. Would you accept that?

A I wouldn't accept that. I was-- I'd interviewed people. I'm assuming they were being truthful and honest to me. As I've said, I could see the distress that it was causing a number of people, and the whistleblowing reports are meant to be confidential. Obviously, they've come out through this Inquiry. People-- I'm not-- when you say people have used them as evidence, I just-- I don't know if you can explain that further.

Q So it's been suggested to us that one of the reasons why we should be less than prepared to listen to Dr Peters is because of the behaviours set out in your report.

A I didn't suggest that. I'm not saying that her concerns were not valid.

Q Let's look at bundle 27, volume 4, back to your report, page 82. Why did you only speak to the people on this list?

A The concerns that were brought to my attention were major concerns that would take senior people in the Board to be able to address them and rectify them, so I chose these people because I thought they would be able to give me the information that was required about that. Obviously, you have to make-- you could continue interviewing people for a long time within a whistleblowing, and you do have quite a tight timescale to be able to complete the report.

Q Just to leave this topic, finally, you're comfortable with the idea that it's proper for you to report things that are not relevant to the subject of the whistleblow about one of the whistleblowers in your report?

A I felt it was relevant because it had actually been brought up by both Dr Peters and Dr Redding that part of the problem was around their relationship and how the IPCT were responding to their concerns, so it didn't just come completely out of the blue.

Q Thank you. What I want to do now is move on to your reaction to the HPS whistleblow, so that's an email from Laura Imrie to Jason Birch. It's bundle 27, volume 5, document 7, page 24. So this, we understand, was received within the Health Board on 21 August 2019. Is that your understanding?

A Yes, yes.

Q Right. You, on 26 August, invited Dr Inkster to attend the meeting?

A Yes.

Q Then you further invite her on 19 September to attend a meeting in October.

A Say that again? So I invite----?

Q You then invited her to attend a meeting with you in October.

A Yes, yes.

Q Yes, right, and you produced a report along with a colleague from NHS Fife?

A Yes.

Q That is bundle 27, volume 7, document 46, page 536. 536, thank you. So, what I want to understand is why were you appointed to carry out the investigation?

A Can I just-- That's the summary of the report. Do you have the full report?

Q Not as far as I'm aware, no.

A It may be very helpful for you to see it because it's got more detail and it's got a full set of recommendations.

Q Right. Well, we'll have a look for that over the lunch break.

A Why was I asked to do it?

Q Yes.

A At that time, I think the two directors who were asked to do Stage 2 were myself and William----

Q If we go two pages on, we'll see-- one page on, we'll see the other name. Sorry, page-- that's it.

A No, yes, no, it was in terms of the other director who was able to do Stage 2. It was William Edwards, who was then the director of IT, and it would have been a discussion, "Which one of us should take this on?" We thought that for continuity, because I been involved in previous ones, that I should do it, but in order to ensure that there was a degree of independence in it, we asked Barbara

Anne Nelson to undertake the investigation with me.

Q How do you respond to the suggestion that your report ended up focusing on personality problems?

A I never would use the word "personality problems." That's not language that I would use. What we were focusing on, because it was the subject of the whistleblowing, was that it was about how the IMT was operating, the support for the chair. You've got the list of concerns on the previous page.

Q Well, if we go back to the previous page-- What I'm wondering, though, is that-- So, firstly, before I get to that, what involvement was there with HPS and the Scottish Government in the investigation?

A As you know, the whistleblower had originally gone to HPS, who had taken advice from the whistleblowing help-- the national organisation around whistleblowing and from their own lead for whistleblowing, and it had been agreed that they should ask Greater Glasgow and Clyde to investigate it.

I'm not aware of discussion with Scottish Government, but I know the email from Laura Imrie says, “I have let Scottish Government know,” and so I presume if they were unhappy they would have let me know.

Q Now, back at your statement on page 41 of the statement bundle, you provide this information, which I suspect we would have found out if we'd brought up the original full report, but let's look at page 41. You describe who was interviewed at question 93. What I wondered was why you picked the people on this list.

A They were people who had been-- Oh, there's a misprint there. It should be Chris Deighan, shouldn't it?

Q Yes, we did wonder that.

A They were people who had been involved with the IMT. We had asked Professor Gibson and some of her colleagues that had attended the IMT to be interviewed, and my understanding is that, as a group of clinicians, they had said, "Well, Dr Murphy can represent our views."

Q Right. I wonder why Professor Jones was interviewed, because he didn't attend the IMT.

A He-- Well, he-- I think by then Dr Inkster had resigned and he was attending the IMT. Had he not taken on some of her responsibilities?

Q So what was the complaint about, Dr de Caestecker?

A The complaint was that the chair of the IMT was unable to do her job because of lack of support and culture, that information was being withheld from

her, that there wasn't transparency of communication, and that the microbiologists' views were not being appropriately taken into account.

Q So that's on the-- but really, just following the IMT of 14 August, yes?

A Yes. Well-- yes.

Q So what relevance would it have that someone has been attending a meeting some weeks or months later?

A Well, I think Dr Jones still had a senior role in microbiology.

Q No, no, he did. I accept that. That's not the point, but he wasn't in the IMT. Because everyone else has been in the IMT at some point, but he hasn't. I'm wondering why he's there, that's all.

A Because of his-- I can't-- To be honest, I can't actually completely recall why we invited him, but it was to give the microbiology view of how we could better support the IMT.

Q Why was Annette Rankin or anyone from HPS not interviewed as well?

A The reason was that, again, you've got to put some boundaries around who you interview or you'll be still investigating it a long time later. It had already taken quite a long time to get all these meetings in the diary. If we'd felt after we'd interviewed these people that we needed to get further views, we would have-- we could have invited Annette Rankin.

Q Because one of the things is that Annette Rankin is the first person who speaks, I think – yes – at the IMT on the 23 August after Dr Crighton says-- introduces herself. She asks why there's been a change of chair.

A This whistleblowing wasn't about why we changed the chair, because this whistleblowing was about-- the chair felt she was unsupported. So it was looking at what are the issues in running and leading a long-standing, complex IMT such as this, and how can we make sure there's better support?

Q Is there any connection between the complaint – not by the chair of the IMT, by somebody else – that the chair is not being supported on 14 August and the issues around that, and the issues around the change of the chair? Is there any overlap?

A There is an overlap in that the reason we had the meeting on 20 August was because we'd had a lot of very important feedback about how that 14 August meeting had gone.

Q But not the feedback that's in the HPS whistleblow. It was different feedback, wasn't it?

A It was different-- it was different feedback, but it was still about we need to find ways of this IMT working better and the chair to be supported.

Q Because the point that I suppose it boils down to is this, is that you've described, and with some confidence and some detail, how you receive feedback from various people before 20 August and that informed the decision at the meeting, and there's a separate piece of feedback which arrives after the meeting of 20 August on the 21st, which is – you're nodding at me----

A Sorry, yes.

Q -- which is not the information-- it's not the same piece of feedback, but you'd accept that it's a different piece of feedback?

A Yes.

Q Yes, and so you're in the position where you're investigating a whistleblow about a meeting when you've already decided that it's sufficiently problematic the chair needs to change, am I right?

A No, we'd already decided-- or I had chaired a meeting where it had been decided that we needed to change the chair in order to support the working of the IMT. So, as I've said to you before, we had hoped Teresa-- that Dr Inkster would continue on the IMT, still giving all the expertise that she was able to give but not having to worry about chairing the meeting.

Q So, you don't feel that you're actively conducting an investigation into a whistleblow that's discussing the same group of events as one that you've already reached a conclusion about?

A This-- If you see the full report of the second whistleblowing, we do talk about the chair. We say that it can be very difficult to chair and be the subject expert, and we specifically say this in no way was a personal criticism of Dr Inkster. It would be difficult for anyone. The report says that----

Q I'm not----

A -- but it also gives a full set of recommendations about other things that need to improve in there.

Q I appreciate that, but the point that I'm trying to put to you is that you had been part of a process that on 20 August had reacted to one set of feedback from the meeting of 14 August and had decided to take certain steps, including changing the chair. You'd accept that?

A Yes.

Q Now you're conducting a whistleblowing investigation into a different piece of feedback from 14 August and what should flow from that. Am I right?

A Yes.

Q Right. Is there not a clear and obvious conflict that you are investigating something where you've already made your mind up about aspects of the meeting of 14 August?

A I didn't feel it was a conflict of interest because I genuinely, in that previous meeting, was wanting to support Dr Inkster and also make the IMT work better. So I didn't feel personally it was a conflict of interest, but we did have another senior person also investigating it with me, and I suppose if people had felt there was a conflict of interest – and I heard Dr Inkster say that – there were plenty-- she could have-- they could have gone back to HPS and said, "We don't think that I should be part of it." I still wouldn't have thought I had a conflict of interest, but if I was perceived as having a conflict of interest, we would have thought about somebody else doing it.

Q Isn't it up to you to work out whether there's a conflict of interest?

A Well, I've just said, I didn't think I had a conflict of interest because in both of these processes, I wanted this very important IMT to work as well as possible and I wanted to find a way of supporting that.

Q Thank you. Supporting the IMT?

A Supporting the IMT to work as well as possible, and the recommendations we made in that second whistleblowing have been incorporated into our IMT guidance. I hope we don't end up in a similar situation, but if we did, with long-running and difficult IMTs, there's a much stronger guidance on the membership and the support and the-- how to help these IMTs run well.

Q Thank you. I'm just going to check with-- My Lord, I've got on my system a page of notes covering three other issues and then I do need to have a break to check a document which I've been-- my attention has been drawn to. I'm proposing to sort of press on for another 15 minutes and then break then.

THE CHAIR: I'm in your hands, Mr Mackintosh. So, do you want to break now or----?

MR MACKINTOSH: No, I think I can go on a little bit longer, but I will need a break before we wrap up this witness's evidence because I'll need to check some documents that my attention's been drawn to.

THE CHAIR: Right. Well, as I say, I'll be led by you.

MR MACKINTOSH: Thank you. So, I want to turn to the investigation into a 2018 whistleblow by HPS, which is in bundle 27, volume 5, document 13, page 32. Do you remember this whistleblow, which I think we see on the next page?

A Yes. Yes, I do.

Q Yes. Now, what I want to do is just understand, because we've got some of the information, but I thought it best to get it straight from you because it wasn't

in your statement and we didn't know about it at the time. In essence, I take it the investigation here is about the ventilation in Wards 5C and 5D. What do you understand the point being raised by the whistleblower is?

A The whistleblower felt the ventilation was not suitable for the type of patients in an infectious diseases unit.

Q In this investigation, did you come across an SBAR by Dr Inkster from some years before, which is at bundle 4, document 10, page 49?

A I didn't do this investigation. The investigation was undertaken by Health Improvement Scotland.

Q Well, I appreciate that. I was going to come to their results on the way, but they did seem to have asked you – you, the Health Board – various questions.

A They did.

Q So I want to check what the Health Board knew because, well, obviously, that would affect the validity of the answers that were given.

A Okay.

Q So this May 2016 SBAR about isolation rooms in critical care, is that something you would have seen or been aware of at the time?

A No.

Q No? Okay, and there was a letter from infectious disease consultants in May 2016. Bundle 14, volume 1, document 4, page 88. Is that something you would have been aware of at the time?

A No.

Q The next page.

A I do know about the letter. I've read it, but I wasn't-- Actually, that was-- I wasn't aware of it at the time.

Q Yes. If we go to the HPS response because I think we should wrap this up with that. It's bundle 27, volume 13. I think it's document 12, page 72. Allow me to get the right page. If we look at the bottom of the page, do we see there's an email from a Ms Hamilton from HIS? Over the page we see the answer, and the questions that were asked is:

> "We asked them, 'Are you aware of the concerns and how have you responded? How are you assured the ventilation system within the infectious diseases unit 5C/5D is adequate and appropriate pressure is maintained? Have there been identified patient care issues?'"

Now, I'm just wondering what level of weight we can draw from the information that you supply to HPS as a Health Board, and they then pronounce themselves satisfied if they aren't told about the original SBAR that starts the

conversation about whether the infectious diseases isolation rooms are appropriate back in 2016?

A As I say, this was-- the original request for information went to Jane Grant, the chief executive, who then produced a response to that, showing that there had-- the year before the infectious disease consultants had identified this issue, and that the infection control doctor and the Estates staff had commissioned a specialist ventilation contractor to investigate this and address it and then validate it, and there was also further engineering work being done on the negative pressure rooms.

So, I wasn't-- because HI-- Health Improvement Scotland had asked these questions and looked into this and looked at the validation, when I responded to HPS, I wasn't being asked to investigate it. I gave them that same response.

Q Thank you. Well, we'll look into that for our next hearing, then. If we can look at page 38 of your statement, question 80. I wonder if you're correct about the identity of the first doctor listed in-- Well, possibly we might be wrong here because this is our question. Do you think we might have been wrong in the question we asked you at question 80 referring to Dr Inkster and Dr Peters raising their concerns to the Scottish government? Do you think it might have been Dr Redding and Dr Peters?

A I don't know, because we-- the Scottish government talked about three whistleblowers. I couldn't tell you, hand on heart, who they were.

Q Well, we'll make sure we're clear about that in the future.

A But I think when I answered that, I had seen documentation between both Dr Inkster and Dr Peters to Scottish government about various issues with the oversight board, etc., so I assumed it was that you were asking about.

Q Fair enough. I want to turn to the final issue before the break, which is communication with parents. I wonder if we can look at your answers to question 150A on page 58. Now, I appreciate we asked you about this. We asked you about the adequacy of communication and information sharing between staff and patient and families, and you explained you didn't have a direct involvement, but you're aware that clinicians and managers tried very hard to ensure the communication was good and that parents could feel it could be improved. You've described how one issue-- one episode could have been improved.

I just wondered, over the next page, which is a heavily redacted section-- Now, Professor Cuddihy has been very happy for us to discuss him as the parent

involved in these events. I wonder what your source of this information is?

A It was from-- I was trying to remember why it was raised, but Dr-- Mr Redfern raised it in the second-- my interview with him in the second whistleblowing. I can't-- I don't know if I can absolutely remember why that came up in that, but he talked about this incident and then I looked further at the documentation around it.

Q But you didn't speak to Professor Cuddihy?

A No, and I think, as I said, these-- I tried, when you asked me the questions in the-- for my statement, to answer them from information that I had, but many of these things, I was not----

Q No, I just wondered what the source is, but the source is Redfern plus documents, effectively?

A Yes.

Q Okay. Now, my Lord, what I was proposing to do at this point is suggest we have a short break because there's a piece of evidence that it's been suggested I look at from Glasgow 2 and a document that may well exist somewhere in our system, which I will encourage someone to go and find. At the same time, I might seek any questions from my colleagues that they want me to ask.

THE CHAIR: Indeed. How long do you want to spend?

MR MACKINTOSH: I think if we do ten-- just over ten minutes, but if I can't find the document, that might slow me down, but ten minutes to lay out my objective. Certainly by five to at the latest.

THE CHAIR: Right. If we budget at ten minutes and we'll see how it goes. So, again, Doctor, if I could ask you to return to the witness room.

(Short break)

THE CHAIR: Mr Mackintosh?

MR MACKINTOSH: I have no questions, but I need to wrap up two bits of evidence and explain what we're going to do with them.

THE CHAIR: Right, and have you ascertained whether there's any questions in the room?

MR MACKINTOSH: Yes, I think the room has no other questions they want me to ask, as far as I can tell.

THE CHAIR: Right. Very well.

MR MACKINTOSH: Thank you. Doctor, I've got no more substantive questions, but there's two little loose ends I want to wrap up, one of which was your email-- discussion of the email from Dr Kennedy. Remember you gave evidence on the third page of your whistleblowing Stage 2 report? There's a discussion about air changes.

A Yes.

Q You'd explained how the whistleblowing lead had suggested you get more information----

A Yes.

Q -- and you explained you had an email from Dr Kennedy----

A Yes.

Q -- which I think was an email on 10 July 2018.

A Yes.

Q So it's not in a bundle, as far as we can see, but it appears it would have been-- it was sent to us in an RFI, so we will track it down and stick it in a bundle so that everyone can see it.

A Okay. Yes.

Q The other matter was you explained that you'd had some feedback through Ms Devine and, I think, Dr McGuire about views of nurses who'd attended the IMT on 14 August. Have I got that right?

A Yes. Now, they didn't-- I was not given anybody's names or who had said what. They just said they'd had feedback from the nurses-- from nurses at the meeting.

Q Right. We have two nurses, Ms Somerville and Ms Howat, who were present at the meeting. We actually did take evidence from them last year. I'm not sufficiently up to speed with the whole scope of their evidence to start putting things to you, and anyway, you didn't speak to them.

So what we will do is we'll make sure that we've read-- reread their evidence before we reach any conclusions around this issue, but there are statements and transcripts for Ms Somerville and Ms Howat in our system. I'm just saying that really for the benefit of myself and my colleagues that we don't lose the connection, but you didn't speak to them?

A I didn't speak to them. I mean, we could ask Dr McGuire or Sandra-- Ms Devine whether they were the people that had given feedback.

Q Well, indeed, we could do that, and we'll consider that a possibility, but from your point of view, in the meeting on the 20th, it's one of the bits of information that you get?

A Yes, that people had given that feedback.

Q Thank you. On that basis, my Lord, I have no more questions for Dr de Caestecker.

THE CHAIR: Right, and I understand there is no further questions in the room. Dr de Caestecker, that is the end of your evidence and you're free to go, but before you do, can I say thank you for your attendance this morning and thank you for the work that will have gone into preparing your witness statement.

So, thank you for that, but you're now free to go. Thank you.

A Thank you. Thank you.

(The witness withdrew)

THE CHAIR: Right, I think we should be able to meet again at two o'clock----

MR MACKINTOSH: For Mr Wafer, it'll be Mr Maciver.

THE CHAIR: Yes.

(Adjourned for a short time)

THE CHAIR: Good afternoon to those in the hearing room and good afternoon to you, Mr Wafer. Can you hear me clearly?

THE WITNESS: I can do, my Lord, thank you.

THE CHAIR: As you understand, you're about to be asked questions by Mr Maciver, who you should be able to see on screen, at least in due course, but before then I understand you're prepared to affirm.

THE WITNESS: I am.

Mr TIM WAFER

Affirmed

THE CHAIR: Thank you, Mr Wafer. Now, we've scheduled you for the afternoon. It may be that your evidence does not take all that time. I simply don't know, but if you want to a break at any stage, please just give me an indication and we can take a break.

THE WITNESS: Thank you.

THE CHAIR: I'll now ask Mr Maciver to begin.

MR MACIVER: Thank you, my Lord.

Questioned by Mr MACIVER

MR MACIVER: Could you tell the Inquiry your name, please?

A Timothy John Wafer.

Q And your occupation?

A Director.

Q That's director of what organisation, please?

A The director of two organisations: Water Solutions Europe Limited and H2O Solutions Europe LLP.

Q Now, I understand you were involved in some work at the Queen Elizabeth Hospital in Glasgow from around June 2018 onwards, is that correct?

A That's correct, from 15 June.

Q In broad terms, that involvement concerned the establishment of a chlorine dioxide programme, would

that be right?

A That was the primary assignment of the role, yes.

Q You've already prepared a statement in that regard for the Inquiry, is that right?

A That is correct, yes.

Q Are you content to adopt that statement as your evidence before it today?

A I assume that this is the questionnaire that got sent out, is it?

Q Yes, the one that you've completed.

A The one I completed. Yes, I am.

Q Now, I'll refer you this afternoon to that statement, and when I do, it will come up on the screen in front of you. It may be that other documents come up from time to time. First of all, could I ask you to look at page 1 of the statement, which will be page 63, I believe, of the statement bundle?

A Is that-- is that coming up on the screen? Yes, okay. Yes, I have that.

Q Okay, now, question 1 you've set out some of the details of your career over 50 years involved with water in various disciplines.

A Yes.

Q How long have you been involved with chlorine dioxide?

A I would suggest 25-plus years.

Q I wonder if you can describe in broad terms what that involvement was? Was it designing systems for buildings or other work?

A It was designing, implementing, managing, operating and the use of chlorine dioxide across a variety of disciplines not limited to health care.

Q Thank you. You mentioned at the very start two companies or two entities that you're director of. Which umbrella did you work under when you were involved with QEH?

A H2O Solutions LLP.

Q Later on in your statement, you've mentioned that Water Solutions Group is still involved at the hospital. That----

A Yes, well, H2O Solutions is still involved at doing work for Queen Elizabeth Hospital, yes, and Greater Glasgow and Clyde, yes.

Q Okay, I wasn't quite clear of that, and perhaps the misunderstanding's mine. When you say "H2O Solutions" and "Water Solutions," are those different names for the same thing?

A We have two businesses: Water Solutions Europe Limited, which is a limited company, and the original founding partnership, H2O Solutions Europe LLP.

Q Okay, thank you. Before I

move through the statement, this isn't part of the statement, but am I correct in understanding that at some point you've carried out a role as an authorising engineer?

A Yes, I am an authorising engineer, and I carry that role out currently for a number of NHS establishments and major offering facilities management companies, yes.

Q Okay, where is that that you carry out those roles?

A They're for NHS locations in England and one in Scotland.

Q I described it as authorising engineer; is that authorising engineer in respect of water, or is there a further specialism to it?

A No, only water.

Q You mentioned 15 July as being the-- Well, I've noted it as 15 July 2018 is the date in which you became involved with the Queen Elizabeth.

A Sorry, correction: 15 June.

Q Thank you, and if we go over a page to page 64 of the statement, you mention here in your answer to question 2 of having first had contact with Ian Powrie. Do you see that?

A Yes, I do, yes.

Q Could you tell me how was that contact made, please?

A It was made via-- I think-- It's a long time ago to recall. I think it was either a phone call or an email trigger from Ian Powrie.

Q Did you know him before?

A No, I did not. We did not know GG&C. We did not know Queen Elizabeth Hospital before.

Q Yes, so did this communication come out of the blue, then, as far as you were concerned?

A Yes, it came out of the blue as far as we were concerned, yes.

Q What was the initial conversation or communication about?

A The initial conversation was a very brief overview that there were some issues with water and that they were considering the implementation of a secondary control measure and that we had been put forward, having done a number of these installations around hospitals in the United Kingdom, that we may be able to assist them, and we were invited up to come and have a discussion.

Q Were any papers sent to you at that stage?

A Not at that stage.

Q Okay. You mention that you were told there were issues with water. Were you given any understanding as to what the nature of those issues would be?

A Just microbiological issues, which is what we would typically expect

anyway, so that wouldn't surprise us. When people contact us, it's normally because there are microbiological issues.

Q Okay, and we know that, as matters progressed, it led to the introduction of a secondary control mechanism.

A Yes, it did.

Q Was there any indication at that early stage that you were contacted that this was contemplated or had been decided on?

A That they had looked at a number of potential systems, and chlorine dioxide at that time was the favoured system. However, they wanted to have a discussion with myself as to how that could be implemented and suitability.

Q Okay, and just to be clear, was this at the stage of the initial email or phone contact that you learned that chlorine dioxide had already made its way to the forefront as a favoured system?

A No, because there was virtually very little exchange of email at that time. The plan was that I was going to go up and have a meeting with Ian Powrie and discuss the whole thing with him face to face.

Q Okay. I'll come to that in a moment, but first of all, since we're in the territory of talking about chlorine dioxide, I wonder if you can just describe to us

what it is, how it works and so on.

A Chlorine dioxide is basically an oxidising agent. It's generated from two chemicals, predominantly sodium chlorite being the precursor and an acid, which can be a number of acids: citric, hydrochloric, phosphoric. Basically, the acid activates the sodium chlorite as part of the reaction and generates chlorine dioxide.

Chlorine dioxide is a gas in solution, and it's-- I suppose you could describe it as relatively unstable. Give it energy and you can part it from the water, but it'll rapidly come back to the water. But it's a very effective agent at penetrating things like biofilms and the DNA structure of microorganisms.

Q Okay. Now, you're an engineer by background and so don't feel that you need to attempt to give chapter and verse if it's not within your competence, but are you able to tell us how chlorine dioxide physically or biologically works in tackling these organisms?

A In simple terms, it is absorbed through the cellular wall and disrupts the DNA structure of the organism and thereby annihilates it. So you typically don't get recurrence of organisms once they've been attacked by chlorine dioxide.

Q Okay. We've heard some evidence that there are certain organisms

for which it is much less effective and that that included some organisms present at the hospital. There was reference to one called Mycobacterium chelonae. Are you aware of that organism and are you are you able to tell us anything about it?

A Mycobacterium chelonae, yes, I do know about it because of work that we've done with another NHS organisation. Actually, at that organisation, we did not use chlorine dioxide. However, I think it would be true to say that all oxidising agents can have a variety of performance depending upon the circumstances that you are giving them and the methods of delivery, so it depends-- I mean, lots of microorganisms have the ability to hide within either biofilms or other organisms and it's whether or not the chemical that's chosen can actually get to them to actually kill them.

Q Specifically, were you aware at any point of the presence of the Mycobacterium chelonae at the Queen Elizabeth?

A No. We were aware of a number of organisms, but not specifically that one.

Q More generally, what would the advantages or disadvantages of chlorine dioxide be as opposed to other potential biocide systems?

A In some respects, easier to apply; the fact that it would actually work through biofilms and destroy biofilms, and therefore work as a removal or cleansing agent; and that it is, in some respects, slower acting and therefore the rate of absorption works to our favour rather than necessarily being too fast. The level-- I suppose the best thing is to describe it-- the level of burn-off is reduced.

Q Are you aware of electrolysed water as a potential control mechanism?

A I'm aware of many systems under many names, unfortunately. Yes, so electrolysis of water, yes, we've come across it, yes.

Q Moving on. At question three, further down that page, you mentioned that you were brought in for "technical input." That's in the second line of your answer.

A Yes.

Q In general terms, what does that mean, please?

A To assist with the design and the dosing strategy that was going to be employed. So here we have a-- To some extent this was a fairly, I would say, unique situation because you have a very, very large facility operating from a centralised source.

So it's how did we perceive that we were going to get the delivery of the chlorine dioxide from the centralised

source dispersed around the facility? How effective was that going to be? How were we going to consider the differences between hot and cold systems?

Q Okay, I'll perhaps ask you a little bit more about that when we come to your visit in a moment, but sticking with the time before you had actually visited the premises, were you told before you went there about the degree of contamination that might be involved?

A No, not before we got there.

Q Perhaps I used the word contamination----

A Sorry, can I just clarify there? Not that we recall.

Q Okay. I mean, I used the word "contamination" there rather than risk, putting words in your mouth. Is contamination the right word for me to have used there? What would your----?

A It's as good a word as any.

Q I wonder if you might, then, give us your understanding of what you would mean by "contaminated."

A Well, basically, we would be looking at potentially microbiological contamination, which would be either specific organisms or general biofilm.

Q So what stage in the process would it have been possible for you to form your own view as to whether you were dealing with a contaminated system?

A Certainly, after the first few visits, we were able to develop a fairly clear understanding of what was required. In some respects, this was, at that stage, nothing more than we might have seen elsewhere with other systems. It was a contamination of a water system, domestic hot and domestic cold. It required a secondary control measure to improve the situation, and it was the implementation of that secondary control measure and how did we make that robust enough to meet the demands of a very complex site?

Q So in terms of the language you've used there, "secondary control measures," what, in general terms, does it tell you about a system if it's having to move to a secondary control measure phase?

A Typically, primary control measures are that of-- We have a phrase that we use: “Keep hot water hot, keep cold water cold and, above all, keep it moving." If you do that as your primary control, then typically you should be dealing with the majority of issues. Now, by that I mean that hot water needs to be delivered at 60-plus degrees and returned back at circa 55 and above. Cold water needs to be less than 20 degrees. They are all defined within the SHTMs and the HTMs.

Q Does it follow from that, then,

that if that is happening and yet the system still needs to move on to secondary control, then you're dealing with a system that has gone out of control?

A The system may have gone out of control for many, many reasons. It could be a failure in the circuitry or the flow of the water system. It could be lack of use in certain areas where you're getting stagnation. You might have parts of the building that are high occupancy and heavily used and therefore you get good water consumption and good water flow – going back to my hot, cold and moving scenario – and you may have other areas of the building where there's very little use of water. Whenever you get stagnation or low use-- low flow of water, that is giving it the opportunity for biofilms to form. When biofilms form, that gives a home and a haven for microorganisms to develop.

Q Turning back to the page we were looking at, page 64 of the statement bundle, at the foot of the page – this is within the answer to page 3 – the last paragraph begins by saying that:

> "WSG (Water Solutions Group) has had key involvement in the technical aspects of a number of key controlling biocide systems, predominantly in healthcare."

A Yes.

Q It may be that you've told us as much as you wish to tell us at the moment, but I wonder, could you explain in summary anything further that's-- I'll start again, sorry. Can you just simply explain to us what that means, please?

A Yes, so basically, for a number of healthcare establishments, major hospital environments, we have designed, implemented and verified the performance of chlorine dioxide systems within those healthcare premises. Some of these are from new to very old hospitals.

Q When you say within that phrase "technical aspects," can you give us an indication of what that means, please?

A Well, that's coming up with the capacity of the dosing systems that are going to be employed, the monitoring, where we need to put monitoring devices to measure the chemical levels within those water systems, and the necessary control and dosing strategies that need to be implemented.

Q In the next sentence:

> "Due to the complexity of the water system, IP [Ian Powrie] required WSG to work with facilitators of the biocide systems to ensure the necessary control

measures and dosing strategy was implemented."

Can you explain to us what you understand was meant by that?

A Yes, so in essence, we were going to come up with the philosophy and the strategy that was going to be employed. We do not supply or manufacture or install any of these systems, so we would work-- so we were going to work with and liaise with the organisations who were going to put that in.

So, in this instance, we had a company who were going to provide the chlorine dioxide equipment, the generating equipment and the monitoring equipment. We had another organisation that were going to do all the engineering works that were going to have to modify the pipework to handle all the installations that were necessary, and with that, working alongside the necessary mechanical and engineering contractors.

Q So I should understand you as being the designers, the directors of this project, whereas other people were the contractors?

A I wouldn't say designers and directors. We provided the technical support from the initial design of the strategy. Depending upon which manufacturer you would have gone to for the equipment, they might have had a different view on how they would have implemented it, so it was, did we agree with that implementation?

Q Okay, thank you. If we could turn over the page, question 4 is on page 65, and the question here you'll see was asking about:

"Between initial contact and you visiting the hospital, did you have further contact regarding your task with whom further information [and so on]?"

Your answer starts by describing meeting a number of people and you give four or five names there. I mean, just to be clear----

A Yes, so I mean, on our visit to the sites, to the Queen Elizabeth, we obviously met with a number of people. Whilst Ian Powrie was our primary point of contact, we obviously needed to meet with people like Colin Purdon and Melville Macmillan, who were on the engineering and Estates side. We met-- obviously to do with the water technical group, there was Mary Anne Kane and Alan Gallagher, so these are-- and many other people. They were just a few examples of names.

Q Right, but I should understand these to be meetings that took place at the hospital rather than meetings that took place in a kind of intermediate stage

before you visited the hospital, is that correct?

A No, every visit-- the majority of the work we did was done at the hospital.

Q How do those meetings come about? Who arranged them for you?

A Ian Powrie. So we would develop, I suppose, a task list of things that we needed to do. We would get that together, there would be an exchange of emails regarding that and then we'd organise a visit for me to go back up to the hospital.

Q What sort of things did you learn from those meetings?

A More about the water systems than the-- than the issue itself, so all our questions came about the way that-- the routing of the water through the hospitals, getting hold of drawings, getting hold of water consumption data. More of the technical data involved in the water systems themselves, rather than necessarily being the microbiological issues.

Q I'd like to ask you about your initial impressions of the site. You alluded to this earlier on, but if we go over the page to 66, this is when you're describing your visit to the hospital.

A Okay.

Q I'll just ask you, in general terms, what were your impressions of, firstly, the size of the site?

A Enormous. It was a very, very large facility and I think, as I stated here, my initial impression was that, given the size the facility and the spread – in other words, it was very-- it was large and drawn – that our view was that there was a vulnerability due to, if anything happened in the central plant room, that went everywhere because everything came from a centralised source.

Q You've anticipated my next question, which was going to have asked you separately about the size of the water system. What were your impressions of that?

A Do you mean the overall size of the hospital water system, or are we talking now about the plant room?

Q The overall size, but you can move on to the plant room as well if that's relevant.

A Okay. It was big. It was vast. It had a number of delivery points, i.e. it had what we call risers, where the water went up and then was disseminated out, but everything was delivered from this one centralised plant room.

Q Does it follow from that that you were immediately struck by a point of vulnerability in the system?

A Yes, I was, because whatever went wrong-- well, if anything went wrong in that plant room, it went everywhere.

Q Did you become familiar with

the plant room?

A I would say intimate, yes. Yes, intimately concerned with it. We got to know the plant room extremely well because the plant room, in some respects, was our first starting point for the chlorine dioxide system. The chlorine dioxide systems were going to start in that main plant room and emanate out from there.

Q Yes, you suggested in your answer a moment ago that, "I might make a distinction between the size of the water system and the size of the plant room." Have you got any remarks to make about the size of the plant room?

A No, not specifically, no. I got comments to make, as I think I've already said within question 5, that there was a concern that we picked up on about the damp and there was an overriding smell of mould within that plant room, and I think, from discussions, there was a potential ventilation issue with it.

Q Could you----

A And that was not just picked up by myself, that was picked up by others as well.

Q Okay. Maybe you can elaborate upon those points, the points that are made within 5. The damp within the plant room, what were your thoughts on that?

A Well, I think the-- one of the problems was that the plant room was actually, for want of a better word, below ground. Any water that was contained within it was pumped out, so it had to be pumped up and out of the plant room. So if you had any work going on that was in there, the water then basically went to a collection pit and was then pumped away, and the-- I think the potential lack of ventilation or air changes created an environment for mould to develop and for mould to exist.

I know talking on site with another colleague up there that we said that-- we identified that was a-- well, the main air intake for it came through the services corridor, which ultimately impacted on the water plant room. The air intake for that services corridor came from, typically, air that had come very close from the sewage treatment beds that were located near the laboratory building, and I think that was a general thing and I think that's why we came back and said that, you know, was this right as part of the initial design?

Q Okay. Well, perhaps can I ask you specifically about that? What was your concern about the proximity of the sewage works?

A Well, if you've got the wind in the right prevalent direction, then it can-- obviously, sewage treatment beds are loaded with loads of bacteria and that

obviously can get picked up and drawn across and into the ventilation system. That was a concern that we had.

Q Did you have that investigated at all?

A Then-- certainly investigative work was undertaken. Not by us.

Q Do you know who by?

A That was done by Greater Glasgow and Clyde, who did air sampling investigation work.

Q Are you aware of the outcome of that?

A No, we never got to see the results of that.

Q I wonder at this point if I could refer you to a photograph which we have. This will be the end of the list of documents. We've got two photographs that recently came to our attention. I don't know in which order they're going to come up with.

A Okay.

Q That's the first one. This is perhaps not very illustrative. Can I see the second photograph, please? There we go.

A I'm just trying to work out where that was. Okay, yes. (After a pause) On the floor. Yes, I think, yes, and this was one of the issues. I mean, we never-- (Inaudible – overspeaking)?

Q I wonder if I can first just ask you before you give us the narrative, do you recognise the room?

A I recognise the room. It's in the bottom right-- I bet if you open it-- It's in the far corner of the plant room and you actually have to climb up the steps and go through that door to get into it. Yes.

Q Okay, so if we see on that page at the top, there's the narrative, “Basement plant room,” and at the bottom there's a narrative about the door being at ground level. I think you mentioned the ground level intake a couple of minutes ago.

A Yes.

Q As far as you're concerned, are those narratives accurate? Is that what this is showing?

A So, the door in this picture is at ground level. It was ajar and you can see water running down the wall. I can't comment about the water running down the wall because I never-- we never saw that. What we saw was a damp condition, but we didn't see water running down the wall.

Q Okay. Well, that's fair, and you mention-- if we turn back to the statement, within that answer 5, you see you've made reference to damp conditions within the plant room.

A Yes. The plant room always, always had a damp feel to it and there was always a background odour of

mould, and that was commented both by myself and by-- When I met up with Dr Tom Makin up there and we went to the plant room together, we both immediately looked at each other and said, "You know, yes. We can smell mould."

Q I'll perhaps treat those two things separately insofar as they are separate. You mention mould. This is perhaps an obvious question, but what's the problem with the presence of mould?

A Well, the problem with the presence of mould is that it leads to other scenarios and other conditions that we don't want to see in water systems. We don't want mould in water systems and we don't want mould within those environments.

Q The reason for that is what?

A It provides a lovely food source for microorganisms.

Q Thank you.

A We see this in-- when you've got houses that have had flood damage. One of the things that you've got to address is mould because the mould will thrive in those damp conditions and that then leads to things like Aspergillus and so on. So, you know, within the hospital environment, you certainly would not want that. You wouldn't want it in any environment, quite frankly.

Q Yes, and as you say, the smell of mould was very clear to you and to Dr Makin?

A Yes, it was.

Q Now, just to be clear on this, is the odour of the mould an issue-- a separate issue, or not?

A It may be. You couldn't definitively say that. You would need to do air sampling analysis to be able to fully detect that and understand-- You'd need to know how much mould there was and for that you have proper air samplers where you take the samples and you do the analysis from there.

Q Okay. I mentioned the second point that I was interested in from your answer a moment ago was in relation to the damp conditions within the plant room.

A Yes.

Q Now, you've mentioned – not here but I think further on in your statement – the presence of or the storage of components within the damp plant rooms. Do you recall that?

A I recall the storage of components within-- because there was more than one plant room. There was the main water tank plant room, which did the filtered water-- the raw water, the filtered water, which went out into the hospital. Next door, there was a fire suppression water system and a big water storage tank there, and a lot of components were stored within that

environment.

Q Right. Were both of those environments damp?

A Yes, they were, one of the problems being that the firewater storage tank had got a persistent leak, which had come-- which was coming from the bottom of the water tank which could not be gained access to because they'd installed the water tank directly onto the concrete surface rather than putting it up on pillars so that you could actually get access to the underside.

Q What issues were you concerned about as regards the storage of components in damp conditions?

A Right, so components need to be kept clean. They need to be kept clean from the environment. They need to be kept clean from dust, from damp, from mould because, you know, that can provide a source of nutrients, anything there, for microorganisms to develop and grow on. So having boxes of components open to the atmosphere was not the right thing to have.

We talk-- when we look at new constructions today, we talk about components being wrapped, sealed, copper tubing capped at both ends, and the reason for that is that we want to stop the potential for ingress of dirt and damp and anything from the environment to get in there.

Q Was that not what was happening at the Queen Elizabeth when you saw it?

A When we initially saw it, that was not what was happening.

Q What did you do about it?

A That was addressed and that was an action that was taken up by Estates to actually resolve that and get those components moved and into a better environment.

Q Okay. I don't know if you still have question 5 up on your screen?

A Yes, I've got it, and I've got it printed as well, so I can read it both ways.

Q Okay, thank you. The last paragraph, the last five lines, I'll read them out to you.

> "Impressions fitted the Scribe scenario, but the task was more urgent and going to be more complex from an engineering perspective due to the need to install some 29 chlorine dioxide systems.
>
> It was not that the task required change but the amount of biocide systems that were going to be employed increased, which had an effect on timeline."

Could you explain to me, why were 29 systems required?

A So we had the water tanks within the basement plant room, the centralized plant room. So we wanted to treat the cold water with the chlorine dioxide and because of the various demands on the-- on each of those four tanks, we needed to install separate chlorine dioxide systems for each tank, so that took up four systems.

There was also-- within that plant room we had the ultra-filtration plants. So the raw water came into tanks, then went through the filtration plants and then into the filtered water storage tanks, and the filtered water storage tanks, it then went to the hospital.

So the four systems were dealing with the four filtered water storage tanks that took the water out to the hospital, but we also needed to protect the filtered water plant membranes because on the reverse side of the membranes – because they are removing any debris, organisms and everything else – you can get biofilm form on the reverse side of those membranes. So at each of those----

Q When you say the reverse side of the membranes, is this the part of the membrane facing the mains supply?

A This is the part of the membrane that would be facing the raw water supply, yes.

Q Yes.

A And so, effectively, we utilize the chlorine dioxide-- Those membranes are-- periodically go through what we call a backwash cycle to wash off any debris, so we utilise chlorine dioxide with it on those membranes to provide some assistance to keeping those clean as well.

Q Right, and did that necessitate another four systems?

A That necessitated-- there were two filter plants and there was a third plant being installed as part of the improvement program, so that ended up being three additional systems.

Q Okay, so does it follow-- You've already told us about the size of the system, your impressions that this was a vast, vast system. If 29 systems were required for chlorine dioxide, is that a function simply of how large the system was?

A Yes, it is, because the other systems were then employed on the hot water, and the hot water was generated in various parts of the hospital in various plant rooms. So you didn't have a centralised hot water generation. The hot water was generated in the plant rooms that were located around the facility, and that's where we had to put the remaining systems. So each hot generation system had its own chlorine dioxide system.

Q Okay.

A So if we do-- I think if we do the maths, we've got 27 in-- 29 in total. Seven went into the basement and then the remaining 22 systems were utilised around the site.

Q Okay, thank you. Just perhaps to put that in context – again, you've mentioned already that we're dealing with a vast system – any typical job, insofar as there is a typical job, how many chlorine dioxide systems might have been required?

A We have never done a system that required that many.

Q What might the next largest number have been?

A Five or six.

Q I suggested that that was a function of the size.

A It was a function of the size and the fact that we wanted to get the chlorine dioxide disseminated throughout the whole of the system. There's two approaches you can make here. One is you can dose the-- you can start chemically dosing centrally and allow it to disseminate out through the systems, which will take longer, or you can put some more strategically located units around the site so that you can speed up the input of the chlorine dioxide so it doesn't take as long.

Q Does the size of the system also impact upon that calculation that you're making at that point?

A Yes, it does. Yes.

Q Again, the inference I'm drawing is that if you'd had one central chlorine dioxide plant, then it would have taken an awful long time to get round to the extremities of the system.

A It would have taken-- I'm often asked by people, "How long does it take?" and the answer is, you can't give anybody that prediction because you don't know the amount of biofilm and contaminants that are in those systems. So you-- but you can balance the equation by basically looking at it and saying, "Okay, because that system is-- has got a level of complexity, then we need to put more than one plant in."

Q Was there a complexity to the system separate from its size?

A No, I think the system was straightforward, you know? It had a flow and a return on the hot. The cold system, whilst it was large, yes, it went out through the various booster sets and up the various risers to get it to where it was needed. So, no. I mean, it was an orderly system.

Q One feature of it you've mentioned later in the statement is dead legs. Can you explain the issues you encountered with those, please?

A I think today we have a better understanding of dead legs. I think if you

go back to maybe 2018 and certainly '15 when this thing was constructed, I don't think we had the awareness of dead legs in the same way we do today. So a dead leg basically provides an opportunity for organisms to find a home and grow and develop because they're not disturbed. It is a dead leg. The water does not move through it.

THE CHAIR: Excuse me, Mr Maciver. Can I just take you over that again? To the layman, if I've understood you, that's quite a remarkable statement that-- As I understand it, we're talking about the general understanding within the industry of the significance of a length of piping with water in it not having a flow of water. In other words, stagnant water?

A Yes.

THE CHAIR: Now, as I say, to the layman, the notion that as recently as 2015 there was less of an understanding of the significance of stagnant water as a source of microbial growth, which has changed in the last nine years-- Now, first point, have I understood your evidence? I think, secondly, I would invite you to expand on that because, again, to the ignorant layman, the notion that stagnant water might be an attractive environment for microbial organisms doesn't seem so remarkable.

A I think if we-- and maybe we need to break this down a little bit. If we are talking to people who are in our industry, people like myself, we understand and always have understood, to some extent, dead legs and the problems they cause.

That then has to cascade down and that has to go then down to the people on the shop floor, the people who are doing the installation work, the people who are doing the changes and putting in pipework. And a simple example, you know, is, "Oh, we've installed a sink. It's in the wrong place. We'll chop the pipe and put a cap on the end of it and move it somewhere else." That's creating a dead leg.

Does the plumber, does the installer actually think about that? Some time ago, no, they didn't. I think they do today. They're far better educated today and they understand it more because we, in our industry, keep beating everybody over the head about dead legs.

So, you know, I think that-- so, yes, there is a general-- there's a better awareness as people like myself and my colleague authorising engineers and engineers in water get involved, more-- we are educating more and, as such, that is being picked up on more. Sorry, I possibly haven't put that over particularly well.

THE CHAIR: No, I think I've understood your position. Thank you.

MR MACIVER: I asked the question with a slightly different interest in it. The particular interest I had related to your position as someone who's interested in getting a particular chemical to circulate throughout the water system. Could you summarise for me the problems that dead legs present for that?

A So we cannot assume that if we have got water-- chlorine dioxide-treated water flowing through a water system, that it will actually go up a dead leg, because it won't. You might get some dynamic movement caused by variations in flow and that type of thing, but you won't get as much chlorine dioxide as you more likely would require up that dead leg and so it still provides the opportunity for the organisms to develop.

Q When you first encountered the system at the Queen Elizabeth, did this jump out at you as a problem?

A Almost every system we encounter jumps out at us as a problem because dead legs always seem to appear, and I think it's partially down to the lack of understanding of what a dead leg is.

THE CHAIR: Would you like to expand on that answer, maybe just to absolutely clarify what Mr Wafer means by a dead leg, which is not generally understood?

A So let me explain it by saying you have a length of pipe and off that pipe you've got another pipe coming off it to provide a drain. You install that off a tee piece, you install a drain which basically never gets used – it just sits there as a point to drain the water out of the system – but it might be, you know, a very short length or a very long length, this is still a dead leg. The longer it is, the bigger the dead leg it is and the bigger the challenge.

MR MACIVER: If you move over a page to 67, towards the bottom of that page-- I might perhaps have taken you to this earlier, but if you see the second last paragraph, you're referring to discussions around dead legs within the water systems and how chlorine dioxide would react to these. Do you see that?

A Which question are we on, sorry?

Q Question 7.

A Seven, right.

Q It's at the foot of the page where question 7 starts.

A Ah, yes: "There was also reference and discussion around dead legs within the water system."

Q Yes, and you, in the last-- the second sentence there, the action was to either remove, re-engineer or place on a robust flushing regime?

A Yes.

Q Could you tell me what----

A So, basically----

Q -- what each of these three means?

A So you either cut them out completely----

Q That's remove?

A That's remove the dead leg, so you engineer it out, or you modify it to such a way that it's no longer a dead leg.

Q Could you give me an example of that, please?

A You could route it so it's used somewhere else, so you could actually convert it into something that's used so you get water flow through it, or you have to put it on a flushing regime, which basically says somebody has to go around once, twice a week or daily or whatever and empty the water out of it so you draw fresh water in.

Q Now, two questions from that. You use the word "robust" to describe the flushing regime. What do you mean by "robust"?

A What I mean by that is that you don't-- the flushing frequency and the volume of water that passes through, first of all, washes out the complete length and capacity of the dead leg, and that it's done often enough to prevent the growth of biofilm and the stagnation.

Q If we think back to when you-- maybe 20 minutes ago when you started describing the ideal water system to me, working on the basis of temperature and movement, how does the presence of dead legs affect that ideal?

A Typically, you will not get-- We're trying to be, I think, too general here, but you won't get, for example, on a hot water system-- if you've got a hot water pipework flowing at 60 degrees, depending upon where the length of the dead leg and the size of the dead leg, you may not be able to maintain that 60 degrees up that dead leg. So it can impact on your control and operating strategy.

Q Good, thank you. I took myself slightly out of order when I moved on to dead legs. If we could go back a page, please, onto 66 of the bundle, questions 5 and 6. Question 6, in the last third of the page, is asking you about a DMA Canyon risk assessment dated April 2015, and you said you weren't provided with sight of this document.

A No, we weren't.

Q You then go on:

"Any interpretation from findings and recommendations would have been provided by Ian Powrie."

Then you say:

"As our involvement commenced June 2018, the 2017 document [dealt with in the next

question] would have been more appropriate."

A Yes.

Q I just want to explore that a little bit because later on, you move on to discussing your thoughts about whether contamination might have originated in the construction phase and certain things that happened during the construction phase. Is that correct?

A That's correct. Again, another generalism, but we see a lot of problems originate during the construction phase, and----

Q Okay, and given the construction phase went on to the start of 2015, does it follow that it would, in fact, have been useful to you to have seen the risk assessment carried out at the start of 2015?

A It would've been useful, I think, but potentially more importantly to have seen what actions-- any actions that came out of the 2015 risk assessment had been completed. That would've been useful, but bearing in mind that we were focusing here on the installation, implementation and operation of the chlorine dioxide regime, that was our primary focus at that time.

Q I appreciate that. The issue I'm trying to tease out is whether and to what extent it would've been important to furnish you with the whole history of what had happened in order that you best design the strategy.

A The more information we get, the better it is. However, we were not the authorising engineers here, and that would be more appropriate for the authorising engineers than ourselves. The----

Q Can you explain that to me, please?

A Sorry?

Q Can you explain to me why, please?

A Well, you know, the authorising engineer is responsible for basically doing the audits and reviews of what needs to be done, what's been identified out of the risk assessments, whereas our focus here was how do we get this chlorine dioxide system into this building in an effective way in the shortest possible time?

Q Okay, well, and perhaps you might correct me, but I'll hypothesise to you that the purpose or one of the purposes of the chlorine dioxide system might have been to, for example, remove biofilm that had built up within the water system, right?

A Yes, correct.

Q Part of the information that would've been useful to you would've been the extent of biofilm that you might have expected to be inside the pipes and

fittings and so on.

A You might not have known that even from the risk assessment. Nobody is doing a measurement of the biofilm, and certainly not at that time. Yes, today we can get measurement of biofilm and we can get a better understanding of the presence of biofilm, but certainly back then that was not something that was readily available.

Q Nevertheless, had you been given the 2015 report, it would've furnished you with more information about the history of what had been observed about the system.

A Yes, it would have done, yes.

Q Would that have assisted you in designing a strategy and coming up with a solution that was appropriate?

A I don't-- No, it wouldn't have altered the way we went forward with the strategy.

Q Okay, thank you. Now, again, back over the page at answer 7, which is page 67 of the bundle, we looked already at dead legs at the bottom of the page. Two paragraphs above that, you start off the paragraph beginning:

> "However, it [meaning the 2017 report] does highlight vulnerability of the filtration units located in the water tank room."

Can you explain to me what that means, please?

A There was some-- there were issues identified with the way the filtration units had been connected and piped together.

Q What were those issues?

A From memory, and I honestly-- I'm struggling to remember, I'm sure it was to do with the resilience of delivery. If one went down, it was not necessarily as easy, but that is from memory. And that was corrected during, A.) the installation of the third filtration unit, and as part of the re-piping that needed to be done for the chlorine dioxide anyway.

Q Is there an easy answer as to why a third unit was required at that point?

A Greater resilience, because you've got two units there which were pretty well in full demand. If one went down, you possibly didn't meet the demand that could be placed upon the hospital if there were times of high load, so hence why you needed an additional unit to provide that resilience. So you could always have two units operational with a third out of action if need be.

Q Okay. Right, thank you. I've got another feature of the water system that I'd like you to tell me a little bit about, please. It may or may not relate to filtration; you can explain that to me. Bundle 27, volume 13, please, at page

87. This will come up on the screen in front of you. You'll see here there's a short exchange between yourself and Dr Inkster relating to fungal cultures.

A Yes.

Q Now, the focus here appears to be upon point-of-use filters, is that right?

A So I think this is looking-- predominantly to do with Wards 2A and 2B, isn't it?

Q That's what's referred to, and if you look at Dr Inkster's originating email----

A Yes, and then----

Q -- this “4 out of 30 failures in Wards 2A and 2B” is referred to.

A Yes. Can you just slide that down for me so I can see my response in total? Other way, please. (Pause for reading) So here we were talking, I think, about the performance of point-of-use filters.

Q Is this a matter that's related to chlorine dioxide, or is that a completely separate issue?

A It's a completely separate issue. This is something aside from that. This is not related to the chlorine dioxide. This was part of some other work that Ian Powrie asked us to get involved with, which was to do with point-of-use filters.

Q Was there----

A From memory, this is where I

believe there was a question mark raised over whether or not they might've had some faulty filters, or allegedly faulty filters, and was there a quick and accurate testing method that could be utilised to determine if they were performing or not.

Q Did you ever come to a view on that question?

A Yes, we did, both from Pall, who took some filters away and came back and said there were no faults, and B.) we had some filters in the laboratory and-- I'm just going to go into my pile of paperwork. Yes, we had some of those filters into the laboratory, and we examined them, tested them, cut them open, had a look at them and we could not find any fault with those filters at all. They were doing the job they were supposed to do.

Q Okay, thank you.

A They were preventing the throughput of the microorganisms. However, I think there was the potential for contamination in the outlet spout of the point-of-use filter because that's after the membrane. So you've got the nice clean water coming through the filter that's got to come out through the spout. There was a potential for retrograde contamination on the spout and on the body of the filter from either the surroundings or from the drain that may

well've been nearby.

Q Yes, and in short, is that if something outside touches the filter, it might make the filter dirty? Is it as simple as that?

A Makes the filter dirty, yes.

Q Okay, thank you. I don't need to explore that any more with you. Now, all this has been leading up to the designing of the chlorine dioxide strategy.

A Yes.

Q We're back at the statement on page 68. It's where question 8 is, and the question there is asking about a chlorine dioxide group being set up. Could you explain to me the process for designing a strategy? Who was involved and what was the starting point?

A So basically, first of all, we had to lay down a specification, what we required, and identify the location of each unit. Then, once we got that all together and into a document and clearly defined, then we had to then bring together a chlorine dioxide provider, an M&E contractor and the relevant engineering and support governance within Greater Glasgow and Clyde so that we could actually form a working group to work through this, to make sure we got the amendments to drawings, that we got the operating manuals, that we had all the risk assessments in place, and that the chlorine dioxide systems went in as required.

Q Could we take the statement back just one page again for the very end of your answer to 7, where you've said that:

> "In the initial period, Ian Powrie was very specific about what he required as part of the remediation program."

Firstly, the remediation program, is that referring to the chlorine dioxide?

A That's referring to the installation of the chlorine dioxide. He was very specific. He had a clear vision of what he wanted, and it was basically how he and I brought that together. If you like, we took his vision and interpreted that into a working solution to be installed within the hospital.

Q You were engaged for your expertise in designing a chlorine dioxide system?

A Yes.

Q To what extent were you influenced by that vision that you're describing?

A No, I don't think we were influenced by it. It was a-- I'll use the word loosely: it was a partnership. It was about-- Ian had the knowledge of the site, which we didn't have. We had the knowledge of the chlorine dioxide, which Ian didn't have, and it was a marriage. It

was bringing those two together to come up with the solution.

Q Okay, thank you. If we flip back over to the next page, question 8. Now, you've mentioned a number of specific elements to the programme-generation technology service providers and provision engineering works required. Now, you've mentioned-- I think you've covered all of those already in your answers, but you then go on to work through specific high-risk areas which could be impacted on the chlorine dioxide, for example, renal.

A Yes.

Q Now, before I ask you questions about that, could I bring up bundle 27, volume 13, page 89, please? There's an email exchange here between yourself and Ian Powrie. In the middle and your email on this page----

A Yes.

Q -- the middle sentence is relating to renal treatments:

> "Renal treatments area are always subject to review and covered under a standalone risk assessment, which is normally completed by ourselves."

A Yes.

Q Now, this email is dated 11 July 2018, so around a month after your initial engagement. Does this show that renal ward was always a special case in your mind?

A Yes. Whenever we go and do a chlorine dioxide consideration, one of the first questions we ask is, "Have you got a renal facility?" That's----

Q Why is that?

A Okay, so we have domestic hot and we have domestic cold systems, but with a renal facility, we have dialysis water systems. So this is a specially ultra-pure water that is used and it's generated by going through a water softener, carbon filtration and then reverse osmosis technology to provide a very pure water which has to meet medical device criteria.

So the last thing you need is chlorine dioxide getting through that because oxidants can cause issues to the dialysis of renal patients to an extent that it can actually lead as far as death. So you are always ultra careful when you come to look at chlorine dioxide and renal installations.

Q What did you do to take account of this?

A So there's a number of things you do. First of all, you ensure that you have installed GAC filtration, so it is granulated activated carbon filtration. Carbon filtration removes the element of chlorine and chlorine dioxide, so that will remove it before it gets into the reverse

osmosis plant.

The next thing you do is that-- because we talked about not only do you have a chlorine dioxide generation and dosing system, you also have a monitoring capability because you have to know what levels you're putting in. So we would have a monitor that measured the chlorine dioxide arriving at the renal department and then the chlorine dioxide post the carbon filtration, after the carbon filtration, to demonstrate that the carbon filtration was removing the chlorine dioxide.

Now, that was then-- we then went through that. That was then discussed in detail not only with Ian Powrie but the renal department and the renal technicians and health and safety and everybody else to make sure that we had a set of criteria, and we came up with a-- basically a protocol. I don't know whether you can actually see that, but basically, we developed this, which was the protocol.

So you have the chlorine dioxide that would be measured before, what alarms would be initiated, what actions would be taken if the alarms went off. So, for example:

> "If greater than one part per million, close fill valve to tank, open dump valve and ensure booster ClO2 plant in the basement is suspended, BMS alarm text to renal technician on call and the stage duty manager operating 24/7."

So, we went-- we made sure that wherever there was renal operations, there was that facility.

Q Okay, thank you. You held a document up a moment ago. It wasn't one that I'd referred you to.

A Yes.

Q I wonder if you could perhaps pass a note to the Inquiry after you finish with the evidence as to what that document was, please.

Q Yes, I can do, yes.

Q Yes, but otherwise, if I'm asking a question and not taking you to a document, I'm content for you to answer off the top of your head.

A Okay, thank you.

Q Now, when it came to putting in place the strategy, you were involved, I think, in two groups: the chlorine dioxide group and the water technical group.

A Yes.

Q What were the roles, respective roles, of those two groups?

A So the chlorine dioxide group was to cover queries raised by M&E contractors. So, if you like, you have the theoretical design side of the chlorine dioxide strategy, but then that's got to be implemented into the practical side: how

are the M&E contractors going to get this installed? How are the chlorine dioxide providers going to do the installation? How are we going to make this work?

So, my role was to answer any technical issues that came up, come up with ideas and solutions where we found problems or we found issues that we needed to work around. That was my role within the chlorine dioxide group.

Q Okay, and the water technical group, was that different?

A The water technical group was basically more keeping the water technical group up to date with what was going on with the chlorine dioxide and sharing, I suppose, knowledge that we had from other hospitals, other sites, because often everything is very insular.

Q Okay. Can we turn back to the statement, please? Page 69 of the bundle, question 9. This is a general question asking about the strategy that you produced and when it was finalised. Firstly, could you summarise for us what the strategy was?

A So there was an emergency to deal with Wards 2A and 2B because they wanted to get some chlorine dioxide dosing into those areas sooner.

Q Do you know why that was?

A That was because there had been the issues around patients and various other microorganisms.

Q Okay.

A So one of the first tasks was to-- "How can we [in inverted commas] lash something together and get it in there and get it dosing quickly?" So there was an installation initially of chlorine dioxide systems up on Ward 2A and 2B. That was the first priority.

Then, basically, we then started then on the water tank room: how fast can we get that into the water tank room and get it operational, meeting the engineering challenges that we have to do, bearing in mind that when we have to come to modify pipework, we can't just turn the system off, because if we turn the system the water system off, we starve the hospital. We were dealing with this centralised plant room with no ability to be able to get water from anywhere else.

Q Now, you mention four dates in that first paragraph, "Design work starting June 2018," and you've told us about that.

A Yes.

Q "Implementation program commencing in September 2018." What was that? Is that the Wards 2A and B that you've talked to us about a moment ago?

A It would have been about that. I'd have to go back and look at the commissioning sheets to get the exact

dates.

Q When you say, "Water tank plant room units became operational December 2018," is that different again?

A No, the water tank plant room, they were the four systems that went into the-- to get the filtered water, the old water that went through the hospital dosed. They became operational December 2018.

Q Then you say, "Other systems operational during first half 2019."

A They were predominantly the hot systems and the filtration plant systems, yes.

Q Why were there different dates? Why not commence everything at once?

A Because you've got a lot of equipment and a lot of engineering work to do that's got to be planned and phased in. Had this gone in on day one before the building was occupied and before you had patients there, you could have looked at the strategy of putting it all in at once.

But trying to implement with all the work that was needed for-- not only have you got pipework changes, but you've got cabling, you've got building management system interfaces to get into place. That's all got to be installed, checked and verified, and that takes time.

We had some fairly significant pipework changes to do in the plant room, the central plant room, and that required a shutdown of the water supply to the hospital, so that had to be programmed in as well and due notice given.

Q I was going to ask you from which of these dates, or any other date, should we understand the chlorine dioxide system as having been operational? Is there an answer to that question?

A December 2018, because it is dosing the water going into the hospital for domestic use and for the hot water use and everything else. So, it's the water that was being delivered from the main water tank plant room. So December 2018 is, I would say, the critical one.

Q Thank you. Again, I would have asked you why it took until then to get the system up and running, but have you covered that already by describing the works?

A I've covered that already, yes.

Q So if we take that as the key date, how long would it take for the chlorine dioxide to permeate the system and begin to have the intended effect?

A It's an unknown. Six months to five years.

Q Could you elaborate on that? Why is it so unknown?

A Because you don't know what

biofilm is in the system. You don't know what is going consume the chlorine dioxide----

Q Explain to me "consume chlorine dioxide."

A Right, so you have a-- If we have a litre of chlorine dioxide and in that litre we have half a part per million of chlorine dioxide, and that half a part per million of chlorine dioxide will be consumed by things that it comes into contact with, like microorganisms, like biofilm.

So you've got-- and you're only putting it in at a certain level because people are going to be drinking the water or it's going to be for domestic purposes, so you can't go and suddenly say, "Oh, I'm going to put in ten parts per million" because we can't do that because that would make the whole thing unworkable. So you've got limits to what the amount of chlorine dioxide you could put in.

So I suppose you've got an equation here, which says, how much contamination have I got and how much chlorine dioxide do I need to get rid of that contamination? Unless you know that, which we don't, you've got to take-- It's contact versus time. It's the CT value.

Q Okay. I asked you before about the 2015 DMA report and you said that that wouldn't have changed how you'd gone about the task, but the information that was contained within that report, might that-- insofar as you're aware of it, might that have been able to give you a-- allow you to make a closer estimate of time rather than six months to five years?

A No. It wouldn't, it wouldn't have allowed it because it also, in that equation, kind of makes an assumption that it's going to get everywhere equally and it's not, because the chlorine dioxide is only going to get to where it's needed by the taps being used. You've got to draw the chlorine dioxide through to the outlet. If it doesn't get to the outlet, it serves no purpose.

Q The flushing you mentioned before is obviously part of that process.

A The flushing is key. Use and flushing are the two key factors.

Q Okay. Sticking to your answer to question 9, the second paragraph is mentioning how:

> "The strategy employed a robust, tried and tested high-purity generation technology so as to avoid unwanted by-products (chlorite)."

Is chlorite the unwanted by-product?

A Chlorite and chlorate are the unwanted by-products. So, the Health and Safety Executive HSG 274 part 2 guidance gives figures for the level of

purity that you need to get for generation technology.

Now, okay, if I go back 25 years, we have a lot of very impure chlorine dioxide because we didn't have the ability to deliver accurately the amounts of chemical required. Today, we have very, very pure, high-purity and, in fact, ultra-pure chlorine dioxide delivery.

Q Now, you've touched in your last couple of answers upon purity, upon ten parts per million not being an achievable level. Is this because chlorine dioxide has a toxicity about it?

A Yes. Right back at the beginning, I explained that it's a gas in solution, so if you turn a tap on-- Take a kitchen sink. You turn the tap on, it impacts on the surface below. That would drive off the chlorine dioxide gas that's in the solution.

So, you can't have too much there, so there are prescribed levels defined in the Drinking Water Inspectorate guidelines, in the World Health Organization drinking water guidance, where they define the maximum levels you will have for water use for domestic-- for human consumption in domestic environments.

Q How do you go about keeping concentrations within the required parameters?

A So, you measure the volume

of water, for example, on the water-- So take a water storage tank. You measure the volume of water going into the tank. You do the measurement by using what we call an impulse water meter, so every time a litre or 10 litres or 100 litres goes past, it sends out an electrical pulse.

That electrical pulse then operates dosing pumps, which then deliver an accurate volume of chemical, which is directly proportional to the amount of water going in. So, in essence, the faster the water goes in, the more chemical goes in. The slower the water goes in, the less chemical goes in. It locks it to be in proportion.

Q Okay.

A You then back that up with monitors that basically measure the level of the chlorine dioxide actually in there, which are the policemen. The monitors act as the policemen to say, "Yes, you've got a green light. You can go," or, "Red. You've got too much chemical in there. We'll raise an alarm or we'll take an action," or whatever needs to be doing. They would suspend the dosing, for example.

Q Is this what you're referring to in your last paragraph on that page?

A Yes, so the dosing strategy was proportional dosing based on water volume via impulse water meter with its monitoring and protection system, yes.

Using membrane electrodes to measure the amount of chlorine dioxide and chlorite where required, yes.

Q Did that monitoring alerting system work, as far as you were concerned?

A Yes, it did. It was tested and validated at commissioning, and it's tested and validated periodically anyway, and yes, we-- and it does work. And, in fact, that whole monitoring system is visible 24/7, 365, both through the BMS system and both to the service provider.

Q Okay. Slightly different topic but also related to dose: can I ask you about the idea of shock dosing? You haven't mentioned that in your statement, but can I ask you whether that was contemplated during the formulation of strategy?

A The only place it was ever discussed was to do with Wards 2A and 2B because when you look at the enormity and the volume of the water system to shock dose, it was impractical.

Q When you say "impractical," is-- why is that?

A Because the amount of chemical you would need getting it round the system, the amount of people and monitoring that you would require to measure it at the outlets, it was too vast a task, and there is a big problem with shock disinfections. Shock disinfections

are good if they remove all the contamination, but if they don't remove all the contamination, they sometimes-- well, they have a habit of sometimes taking the surface off and exposing what's below.

So you can actually then release things from shock disinfections that you don't want to release, and the problem you've got is, once the shock disinfection is gone, you've nothing there then left to kill it. So either you do shock followed by continuous, or, as is often the better case, you'd actually dose continuously from day one and ignore the shock dosing.

Q Okay. You focus there largely upon the system as a whole, as I understand it. How might things have been different for Wards 2A and 2B?

A 2A and 2B, because at the time they were unoccupied, we could actually set the dosing plant up to dose at higher levels, so we could dose at, if we wanted it, two or five parts per million, to actually hit the pipework in that particular area. We could isolate that pipework.

Q Did that, in fact, happen?

A Some of it did happen. I can't remember, from memory, what level we went up to.

Q Can I ask you about a completely different matter at the moment? Just turning back to the operation of the chlorine dioxide group,

there's two references in bundle 27, volume 1 that I'm going to ask you to take a quick look at. Page 578, we have there. This is a minutes from 8 November 2018.

A Yes.

Q It's a meeting that you weren't personally present at, but you've sent your apologies, we can see. If we go over to page 579, there is a reference here to "monitoring and test training plan" at the bottom of the page.

A Yes.

Q It starts off by an indication that roughly 35 to 40 people will need system training. Now, this is being recorded on 8 November. I shan't take you through the other minutes, but, in fact, this is an action point that's repeated throughout a series of meetings. Do you recall that?

A Yes, I do, and I remember that, in actual fact, that Scotmas, who were the chlorine oxide equipment provider, actually produced a video specifically for QEUH Greater Glasgow and Clyde for the chlorine dioxide systems at QEUH.

Q Do you recall when that was done?

A I don't recall when that was done, but I do remember that training was done, but I can't give you the dates.

Q Right, so, perhaps-- I don't think this was within your document list, but if we move on to page 660. No, it is within the list. 660 is another set of minutes from 15 August, and if we look at (inaudible), you are present at this meeting. If we look at the middle of the page, we'll see that there's reference to completion having been achieved in March 2019, so this would have been minutes from August 2019.

A Yes.

Q Do we see in the first of the red paragraphs, about two-thirds of the way down the page, there's a reference again to the monitoring and test training plan? The----

A

> "Training has still not taken place and is now long overdue and posing a significant risk to the NHS. It was reported that dates are awaited from Mel MacMillan."

Right.

Q Yes, and there's a reference below that to the training video, which is perhaps the one you referred to a minute ago having been undertaken and awaiting final edit, and a screening was still to be arranged.

A (Inaudible). Yes.

Q Now, this is nine months after we first saw the reference to training being required, and it's recorded here there's a significant risk to the NHS. Do you have comments to make about that?

How satisfactory is that, from your point of view?

A It is an unsatisfactory position to have been in, and that training should have been facilitated sooner. However, there were sufficient safeguards built into the systems, together with the off-site remote monitoring, to actually not cause it to be a significant risk. In other words, the monitors that were measuring the chlorine dioxide were all linked back to the BMS system and they were also offline-- sorry, online, off-site to the service provider, who had sight of all of those 24/7, 365.

Q Okay----

A With an email backup alert system.

Q Monitoring and alerts and so on, I can understand. I think you mentioned also that there might be other sufficient safeguards present.

A Yes.

Q What might those have been?

A Other safeguards would have been manual testing, so going around and doing actual physical manual testing with a chlorine dioxide test kit, yes.

Q Okay. Well, do I take it that monitoring and remote control would be more-- would work more quickly or would be more rapid a response than relying----

A Yes. I mean, the monitoring is automatic. If it hits the high level, then there is a predetermined course of action that it does.

Q Okay. The second point I wanted to take from the minutes is in page 581. In fact, just go back to 578. Again, we'll recall that that was recording-- this was 8 November 2018 minutes, but the entry in 581 is under "Any Other Competent business, AOCB". Now, you're mentioned in the first paragraph there, but I'd like to ask you, insofar as you're aware of it, the significant issue that's raised in the last paragraph of that section:

> "Significant issue was raised in relation to the fitted pipework within the main plant areas. It appeared that what's fitted doesn't match the as-built record information and the pipework is instead a mix of non-standard Italian brands and Finnish pipework."

Is this something you know anything about?

A Yes, this got brought to everybody's attention by-- So, within the main plant room, you've got your-- all your stainless-steel pipework, which is all covered in insulation. To do the modifications that we required, we have to remove that insulation.

When that insulation was removed and we were doing changes to the

pipework, we identified two things, predominantly. One was that the dimensions were not consistent, i.e. the stainless steel could come from different sources and the dimensions were slightly different. So, for example, I think you had 150 millimetres and 154 millimetres.

The other thing that we identified was that some of the joints – what we call the compression-- the crimp joints, where you actually join the two pipes together – had got significant issues in terms of the way the pipework was cut and finished, and the fact that they weren't fully assembled together, so they created a reservoir of stagnant water within them. So that was to do with the original installation.

Q The significance of that, would it be the same as if there was any stagnant water pool within the water system?

A Yes. The problem with the joint here is that, obviously, organisms can get up within that joint and they can start to grow and multiply, which we did identify. So we did identify that there were microorganisms in there and I seem to recall, on one occasion, we did a measurement and it had about 400 millilitres of water trapped within one of these joints.

Q Do you know if that was addressed?

A It was addressed insomuch as it could be addressed where the joints had become open, but to address it would have done-- would mean you've got to revisit the whole hospital. So it's not a practical solution, but where we did find them within the work that we were doing, then it was addressed.

Q Okay.

A But actually, you'd end up-- you might end up having to do every joint in the hospital and that just wouldn't-- you might as well re-pipe the whole thing.

Q Right, thank you. Now, turning back to your statement, and it may be that this is the last section I need to ask you about-- Page 71 should have question 12.

A Question 12, yes.

Q This is, in a way, looking back now that the chlorine dioxide programme is in place as your company is still involved in carrying out water tests. "What conclusions did you draw?" and your answer is “yes.”

A Yes, we are still involved in that. We do six-monthly audits of the chlorine dioxide units and the service provider's provision, so we got----

Q What have your audits shown?

A The audits have shown, overall, that the chlorine dioxide systems are being operated very well. You will-- out of 29 systems, you will always pick up

something, but overall, the delivery of the chlorine dioxide is good and the levels being achieved around the site are good.

Q The second thing that you detailed there is some testing that's carried out.

A So we identified-- so Ian Powrie identified micrological sampling to provide benchmark sampling so we could monitor the performance microbiologically. He identified a number of locations where we would regularly take samples.

Q Who does the sampling and who does the testing? Is this all carried out by Water Solutions?

A No, the sampling-- the samples are taken by DMA Canyon and the analysis is done through ourselves at the laboratory that we utilise, which is the Intertek laboratory.

Q Okay, thank you. Again, what has that shown?

A It's shown that, actually, the chlorine dioxide regime is performing incredibly well. The failures are almost negligible on the microbiological samples that we get for what we are testing for, and bear in mind that we do not do NTMs on a quarterly basis or Cupriavidus or anything else. We do the-- basically the alert organisms.

Q That was what I was going to ask you about. You've mentioned there

mould, TVC, 22, etc., in the fourth section in your answer 12. Is that everything that you test for?

A That's everything that we test for. Greater Glasgow and Clyde laboratories may well test for other things. Those results are not shared with us, so I don't know.

Q So when it came to things like Legionella, Cupriavidus, Stenotrophomonas----

A Stenotrophomonas----

Q -- things that aren't on your list, are these matters----

A Stenotrophomonas is a Pseudomonas-rooted organism, so, you know-- but no, we don't do that. That will be done by Greater Glasgow and Clyde laboratory. We have the capability to do it, but we've not been asked to do it.

Q So with that caveat, perhaps, what conclusion do you draw about the safety of the water system?

A So, based upon the results that we have got, I think it would be very fair to say that the current water system within QEUH is better than we see in many establishments, based upon the analysis of those organisms that I've listed.

Q How would that answer compare to the answer that you might have given at the start of your engagement in the middle of 2018?

A Oh, well, these samples then were bad. I mean, we had failures. There were failures. The chlorine dioxide has brought the microbiological quality of the water back under control against those organisms.

Q At the risk of asking you to talk your own book here, does it follow from that that your view would be that dosing-- permanent dosing is a good idea?

A If you can provide a surety that your primary control measures are in place and that everything else is absolutely functioning as it should be – your cleaning regimes are spot on, your infection prevention controls and everything else are spot on – then you can more likely get away without the secondary control measures.

However, in the environment that we're in and the challenge that microorganisms are presenting us with, secondary control measures are becoming almost obligatory.

Q When you say "environment we're in," do you mean the environment the Queen Elizabeth is in or environments that we, as a country, are in?

A The environment across the country we're in. We've got aging water systems, we've got an NHS infrastructure that needs money, we've got components that are-- have got wear, we've got water systems that may be failing to be balanced in terms of the hot and the cold, and the secondary control strategies give us that extra resilience. And certainly, if you're looking at a new build, please put it in from day one.

Q Yes, I was considering whether to ask you that question, but you've anticipated. Given that you went on to conclude that many of the problems that arose may well have originated in matters during the construction phase, what is the conclusion as regards-- your conclusion as regards biocide dosing?

A We have a number of sites that we've looked at over the years where they have installed a secondary control measure, typically chlorine dioxide, from day one, i.e. the pipework's gone in and from the first wetting, that pipe-- that water has had a secondary control measure as part of it and they have not had the problems that we tend to see with systems that-- with builds that have not got it in.

Q Okay. Can I ask you, maybe as my last question for now, a different angle on the same issue, which is the chemical properties of chlorine dioxide itself, specifically upon the integrity of the fabric of a system? Could you comment upon that, please?

A At the levels that we are using the chlorine dioxide at, i.e. somewhere

between-- let's say between 0.5 and 1 part per million, 0.5 is the drinking water limit. It is not the chlorine dioxide that is causing any degradation to the fabric. There are other things that will denigrate the fabric sooner. And, actually, we have to consider what degradation does biofilm have? What does the polysaccharide layer have that comes from biofilm due to the pipework?

Q Does that have a comparable effect, potentially, to chlorine dioxide?

A No, I think it's far worse than the chlorine dioxide. The chlorine dioxide does not typically have a detrimental effect on water systems at the levels that we are dosing at.

Q Okay, thank you. I have no further questions for you at the moment, but your Lordship will have----

THE CHAIR: Yes. Mr Wafer, what I need to do is check with the rest of the room, so what I'm going to do is take a brief break just to see if there are any more questions for you. Could you be back with us, let's say, at four o'clock?

A Yes. I mean, I'll just stay on here, and then-- yes.

THE CHAIR: Right. Well, that's perfect because we can tailor our return to whenever Mr Maciver has got the information he needs. Right. Well, we'll take 10 minutes, if that's required.

MR MACIVER: Thank you, my Lord.

(Short break)

THE CHAIR: (Inaudible) perhaps heard, no more additional questions and, therefore, we can allow you to leave, but before you do so, can I thank you for your evidence this afternoon and the work that will have gone into preparing your witness statement? So thank you for that, but you're now free to leave us. Thank you.

A Thank you.

(The witness withdrew)

THE CHAIR: Well, that's us for today, and the plan is to sit again tomorrow at ten with Mr Connal, I think, and----

MR MACIVER: I understand, yes.

THE CHAIR: -- Professor Leanord. Right. Well, can I wish everyone a good afternoon and, all being well, we'll see each other tomorrow at ten.

(Session ends)

15:57