



Grenfell Tower Inquiry

Day 95

February 23, 2021

Opus 2 - Official Court Reporters

Phone: +44 (0)20 3008 5900

Email: [transcripts@opus2.com](mailto:transcripts@opus2.com)

Website: <https://www.opus2.com>

Tuesday, 23 February 2021

(10.00 am)

SIR MARTIN MOORE—BICK: Good morning, everyone. Welcome to today's hearing. I'm here as usual with my fellow panel members, Ms Thouria Istephan and Mr Ali Akbor.

MS ISTEPHAN: Good morning.

MR AKBOR: Good morning.

SIR MARTIN MOORE—BICK: Before we meet our witness for today, can I just mention, for the benefit of those who are joining the hearing remotely but have not been with us before, that those who are not active participants, which I think normally will include the witness's legal representatives, please keep your cameras and microphones switched off at all times to help us to avoid any technical problems.

Now, today we're going to hear evidence from Mr Philip Clark, so I'm just going to check that Mr Clark is there and he can see me and hear me. Mr Clark, are you there?

MR PHILIP CLARK (called)

THE WITNESS: I'm here, sir, yes, and I can hear you very well.

SIR MARTIN MOORE—BICK: Good, thank you very much.

Now, you should have on the screen in front of you the words of the affirmation. Do you have them there?

1

THE WITNESS: Not at the moment, no.

SIR MARTIN MOORE—BICK: I think they'll come up soon, if we are patient. There we are.

Would you please make the affirmation by reading the words on the screen in front of you.

(Witness affirmed)

SIR MARTIN MOORE—BICK: Thank you very much.

Now, there are a few things we just have to run through before we start taking your evidence.

Can you first confirm to me that you're alone in the room from which you're giving evidence?

THE WITNESS: I am indeed, sir, yes, I am.

SIR MARTIN MOORE—BICK: Thank you.

Can you confirm also that you have no documents or other materials with you?

THE WITNESS: I have nothing at all, no.

SIR MARTIN MOORE—BICK: Thank you.

Finally, can I ask you to confirm that your mobile phone is in another room, and that you don't have any other electronic device with you which is capable of receiving messages?

THE WITNESS: I have none of those with me, no.

SIR MARTIN MOORE—BICK: Thank you very much.

For your benefit, I should perhaps tell you that your legal representatives are present in the virtual

2

hearing room and will be following the evidence. They can intervene if they consider it necessary to do so, but we have a system in place under which they will normally be expected to contact Counsel to the Inquiry by email, and so I don't expect that they will actually intervene in the course of the hearing.

I hope there won't be any problems with sound or vision. If there are, we'll have a short break while we iron them out, and I shall have to ask you to bear with us while we deal with them.

THE WITNESS: I understand.

SIR MARTIN MOORE—BICK: If anything occurs that causes you to want a break, or to bring anything to my attention, just indicate and I'll try and make sure I invite you to explain what it is.

We shall have a short break during the morning at about 11.15, and during the afternoon around about 3.15. If you need an additional break at any time, again, would you just indicate and then we'll —

THE WITNESS: I will do, yes.

SIR MARTIN MOORE—BICK: — try to accommodate you.

Since I have raised the question of breaks, can I just mention this: once you have started giving your evidence, it's important that you don't discuss your evidence or anything relating to it with anyone else,

3

including your lawyers, until you have completely finished. I will try to remind you of that whenever we have a break, but if I forget to do so, please just bear it in mind.

THE WITNESS: I'm aware of that, sir, yes.

SIR MARTIN MOORE—BICK: Good. Well done. Thank you very much.

Now, is there anything you would like to raise with me or bring to my attention before we start?

THE WITNESS: No, I'm fine, thank you very much, and thanks for the introduction.

SIR MARTIN MOORE—BICK: Right. Thank you very much indeed.

In that case, I shall say good morning to Mr Millett and invite him to put some questions to you.

Yes, Mr Millett.

Questions from COUNSEL TO THE INQUIRY

MR MILLETT: Good morning, Mr Chairman, and good morning, members of the panel.

Good morning, Mr Clark.

A. Good morning.

Q. Can I start by thanking you very much for coming to the Inquiry today and giving your evidence. We very much appreciate it.

If you have difficulty understanding anything I'm asking you in the course of my questions, please just

4

1 ask me to repeat the questions and I can do that, or  
 2 I can put the question in a different way.  
 3 If you feel you need a break other than as part of  
 4 the scheduled breaks, let us know and we can take  
 5 a break.  
 6 Can I also ask you, please, to keep your voice up so  
 7 that the transcribers can get down your evidence clearly  
 8 and precisely, and also please don't nod or shake your  
 9 head meaning "yes" or "no", because those don't come out  
 10 on the transcript, you have to say "yes" or "no".  
 11 A. I understand, yes, yes.  
 12 Q. Thank you.  
 13 You have made one witness statement, and that's  
 14 dated 15 July 2019. Can I please take you to it. It  
 15 appears at {BRE00005768}, and it should appear on the  
 16 screen in front of you.  
 17 Do you recognise that as the first page of your  
 18 witness statement?  
 19 A. I do indeed, yes.  
 20 Q. Can we go to page 83, please. You will see a signature  
 21 there above the date of 15 July 2019. Is that your  
 22 signature?  
 23 A. It is, sir, yes, it is.  
 24 Q. Have you read this witness statement recently?  
 25 A. I have indeed, yes.

5

1 Q. Now, on 1 December 2020, your legal representatives  
 2 wrote to the Inquiry telling us about some corrections  
 3 that you wished to make to it. Is that right?  
 4 A. That's correct, yes.  
 5 Q. I think it's right that one of the corrections was at  
 6 paragraph 174 on page 41 {BRE00005768/41}. Can we go to  
 7 that, please.  
 8 In that paragraph you say twice that Mr Evans was  
 9 present at the May 2014 Celotex test. You have now  
 10 reviewed the video footage of that test and you wanted  
 11 to change or amend your paragraph in certain respects.  
 12 What would you like to say now?  
 13 A. I'd misunderstood the — one of the gentlemen that came  
 14 to two tests, I for some reason thought that was  
 15 Mr Evans. To this day I still don't know the  
 16 gentleman's name. I thought he was Mr Roper's senior  
 17 staff member. It was — so I can confirm that Mr Evans  
 18 wasn't at those tests as I state in that statement.  
 19 Q. Right. You say you can confirm that he wasn't; are you  
 20 confirming it or are you just saying that you now can't  
 21 remember whether it was Mr Evans or not?  
 22 A. No, I've watched back the evidence that Mr Evans gave to  
 23 the Inquiry, I've checked the video and the person that  
 24 I thought was Mr Evans isn't Mr Evans, so I can confirm  
 25 that. I have seen the video and would say that it

6

1 wasn't Mr Evans.  
 2 Q. Can you tell us who you recall or think was the person  
 3 that you mistakenly thought was Mr Evans?  
 4 A. I can't think of the person's name. No, I can't,  
 5 I'm afraid, no.  
 6 Q. What led you to think that it was Mr Evans?  
 7 A. Because I ... I'd not met him and I just assumed it was  
 8 him. I thought the person who was with Mr Roper was his  
 9 senior staff member.  
 10 Q. Was he not introduced to you?  
 11 A. He may have been, but I couldn't remember him at the  
 12 time. With the amount of work we have, we don't always  
 13 remember people's names.  
 14 Q. The next correction that you told us that you wanted to  
 15 make was to paragraph 251 on page 61 {BRE00005768/61}.  
 16 There, in paragraph (a), you refer to a delivery note  
 17 from Euroform, and in (b) you refer to an invoice from  
 18 FGF.  
 19 Now, in fact the invoice from FGF is not an invoice  
 20 for magnesium oxide, it was for Marley Eternit, wasn't  
 21 it?  
 22 A. That is correct, yes, yes.  
 23 Q. So just to cut through this, can we read this statement  
 24 here as saying that the only invoice relating to  
 25 magnesium oxide is the one that you have identified in

7

1 paragraph (a) above?  
 2 A. That is correct, yes, yes.  
 3 Q. And that one was 12 millimetres, not 6 millimetres; is  
 4 that correct?  
 5 A. That is correct, yes.  
 6 Q. The third correction you wanted to make, as you have  
 7 told us, was at paragraph 267 on page 65  
 8 {BRE00005768/65}. You say in the penultimate sentence:  
 9 "I believe I may have been away (possibly on a first  
 10 aid course) during the strip-down in particular."  
 11 What do you now want to say in relation to that?  
 12 A. From day one I was questioning why I hadn't seen some of  
 13 the things that were on the rig. I subsequently looked  
 14 at a personal diary that was occasionally used on my  
 15 iPad. I had it in my head that at that point I was out  
 16 at a first aid course, and I managed to — unbeknownst  
 17 to me, I had put it into that diary, and subsequently  
 18 had checked that I was actually on a first aid course  
 19 when the system was being constructed, not when it was  
 20 being taken down.  
 21 Q. Right. So to be clear, you were on a first aid course,  
 22 but that was before the test, not after the test?  
 23 A. Yes, that's correct, yes.  
 24 Q. Now, having made those corrections, Mr Clark, do you say  
 25 that the contents of your statement are true?

8

1 A. Yes, I do.  
 2 Q. Have you discussed the contents or the evidence that  
 3 you're going to give to us with anybody before coming  
 4 here today?  
 5 A. I haven't, no.  
 6 Q. Thank you.  
 7 Now, I'm going to start with the topic of your role  
 8 and responsibilities and your background.  
 9 Am I right that you have a BSc in environmental  
 10 chemistry?  
 11 A. That is correct, yes.  
 12 Q. You got that in 1997.  
 13 A. Yes.  
 14 Q. And in paragraph 3 of your witness statement on page 1  
 15 {BRE00005768/1}, you tell us that between June 2006 and  
 16 November 2010, you studied part-time for a postgraduate  
 17 diploma in fire and explosion engineering:  
 18 "Relevant courses included Explosion prediction and  
 19 Mitigation, Fire Risk Assessment and Management, Fire  
 20 Dynamics and Modelling, Fire Safety Design and Accident  
 21 Investigation. I passed written exams and modules for  
 22 Fire Dynamics and Modelling, Fire Risk Assessment and  
 23 Management and Explosion Prediction and Mitigation,  
 24 although I did not end up pursuing the Diploma to  
 25 completion."

9

1 Did you study the fire safety design module?  
 2 A. I did, yes.  
 3 Q. Can you tell us why you didn't complete the diploma?  
 4 A. It was something that I started when the work at BRE was  
 5 quite quiet. I was — at the time I was single as well,  
 6 and we got to a stage where — no, sorry, I wasn't  
 7 single, we'd just had a baby, so things at work and work  
 8 life became more important at the time, I think, and the  
 9 work at BRE grew to such an extent that it was  
 10 impossible to do both, really, and have my family life.  
 11 Q. At what point in time roughly — you can give me the  
 12 year — did you say that work at BRE grew to that  
 13 extent?  
 14 A. So I think probably sort of halfway through the course.  
 15 Q. Yes.  
 16 A. It was one of these courses that, while it claimed to be  
 17 part-time, the period that you had to do the work was  
 18 very tight, so it was the same as if you were on the  
 19 course itself, so it took up a lot of time outside of  
 20 work.  
 21 Q. Which year did the work of the BRE expand in the way  
 22 you've described?  
 23 A. Probably at about 2012, 2013.  
 24 Q. Right.  
 25 Now, is it fair to say that the qualifications that

10

1 you have described or the course that you say you have  
 2 been on and studied meant that you understood the risk  
 3 to life from fire?  
 4 A. Yes, indeed, yes, definitely.  
 5 Q. Now, in 1998 you joined the BRE, didn't you?  
 6 A. I did, yes.  
 7 Q. Was that your first job straight out of university?  
 8 A. Straight out of university, yes. Not my first job in my  
 9 life, but straight out of university, yes, it was.  
 10 Q. At paragraph 13 of your witness statement  
 11 {BRE00005768/3} you say that you took on the part-time  
 12 role of BRE Burn Hall manager in 2004; that's right,  
 13 isn't it?  
 14 A. That's correct, yes, there or thereabouts, yes.  
 15 Q. What training were you given when you took on this role?  
 16 A. None specifically, not for the management of the  
 17 facility, but part of that was internal training, health  
 18 and safety, risk assessment, things to do with  
 19 construction management directives, CDM Regulations,  
 20 because the — we treated the hall as a construction  
 21 site, so the health and safety around that was based on  
 22 what you would expect for CDM with power tools and  
 23 health — PPE, et cetera.  
 24 Q. Did the BRE regard itself as a designer for the purposes  
 25 of the CDM Regulations at that time in force?

11

1 A. No, no, no.  
 2 Q. Now, as part of the role you describe, the part-time  
 3 role of BRE Burn Hall manager from 2004 —  
 4 A. Yes.  
 5 Q. — did you run the cladding testing programme?  
 6 A. I did, yes.  
 7 Q. What did that involve, in summary?  
 8 A. So that would be liaising with clients once they'd  
 9 agreed a contract; agreeing where they would — what  
 10 facility in terms of the wall they would come into;  
 11 working with them to make sure they provided the  
 12 relevant paperwork in terms of risk assessment, method  
 13 statement, and their required liability insurance,  
 14 et cetera, and for their staff; and also checking that  
 15 their staff were competent in terms of using plant and  
 16 equipment and that type of thing. And scheduling them  
 17 in, disposing and getting rid of post-test materials,  
 18 et cetera.  
 19 Q. What about taking delivery of testing materials?  
 20 A. Not specifically. The BRE had a dedicated goods-in  
 21 facility. Most of the materials, particularly the  
 22 smaller items, would go through the goods-in. We did  
 23 for a period of time not have a forklift directly, so  
 24 the larger items again would go through them. But as  
 25 time went on, we had the facility to offload larger

12

1 products ourselves, plasterboard, et cetera, so we would  
2 take that if it came directly to the hall.

3 Q. Thank you.

4 Now, Mr Hayes told the Inquiry in his oral evidence  
5 at {Day74/146:7–15} that you would always be passing  
6 through the Burn Hall going to and from your office, as  
7 a general picture. Would that be accurate?

8 A. My office was in the Burn Hall, yes, that is correct.

9 That didn't mean I was there necessarily all the time.

10 So one of the things I did at BRE was I worked across  
11 with other people in the group, so we could be in other  
12 buildings. But generally, yes, yeah.

13 Q. Right.

14 A. But I could access my office without going into the hall  
15 itself. It wasn't the main thoroughfare.

16 Q. But is it fair to say that you were in the Burn Hall at  
17 least daily?

18 A. Yes, yes, at least once a day, yes.

19 Q. Now, is it right that in your role you worked — and  
20 I say "role", the role you occupied between 2005 and  
21 2015, that's a decade.

22 A. Yes.

23 Q. But during that period, did you work closely with  
24 Kingspan when they were carrying out their BS 8414 tests  
25 on Kingspan K15?

13

1 A. Yes, I would say yes, yeah, I would, yes.

2 Q. Did you also work closely with Celotex on their 2014  
3 BS 8414 tests —

4 A. Yes.

5 Q. Yes.

6 So can we take it that you were at least, and to the  
7 best of your recollection are still, very familiar with  
8 the tests carried out both by Kingspan and by Celotex on  
9 their products?

10 A. Yes. Yeah. Maybe not so much the 2000 — I am now,  
11 obviously, with the evidence that has been sent to me in  
12 terms of the 2005, it's such a long time ago, but  
13 generally, yes, yes, I fully understand what they tested  
14 and when and ...

15 Q. We will come to those tests later.

16 Just sticking at the moment with your role at the  
17 BRE, you say in paragraph 13 of your statement  
18 {BRE00005768/3} — there is no need to go to it — that  
19 in 2015 you joined the Passive Fire Centre within the  
20 BRE and undertook cladding testing as your full-time  
21 role. Is that correct?

22 A. That is correct, yes, yes.

23 Q. What is the Passive Fire Centre?

24 A. So within BRE, the way the work was split out was  
25 sort of semi-divisional in a way. So within the —

14

1 because you have fire resistance, you have sprinkler  
2 passive protection, you have reaction to fire, you have  
3 fire resistance, that was broken down into distinct  
4 workstreams as such. The Passive Fire Centre tended to  
5 look after the reaction to fire tests which — around  
6 passive protection, so insulation, things like cement  
7 particle board, and all of the smaller-scale testing to  
8 do with that.

9 Q. Yes, I see.

10 When you say reaction to fire, you're using that  
11 phrase in the regulatory or scientific sense?

12 A. Yes, yes, so in terms of the test they would undertake.

13 The thing that BRE does is that it does fire resistance  
14 testing, which is a separate building on the site. They  
15 do reaction to fire testing, which is different testing.

16 Q. Yes, thank you.

17 At paragraph 14 of your witness statement on page 3  
18 {BRE00005768/3}, you say that you undertook the heat  
19 release measurements during the Lakanal fire  
20 reconstruction.

21 In general, my question is: what was the purpose of  
22 the Lakanal reconstruction?

23 A. It was to determine ... I think the — they'd come up  
24 with a theoretical cause of the fire, and to look how  
25 the fire had spread from the main initial compartment

15

1 and smoke had spread from that compartment into other  
2 parts of the building, and also how the spandrel panels  
3 on the front of — on the balcony area had contributed  
4 in some way or other to the fire spread in the building.

5 Q. What exactly were you investigating as part of the heat  
6 release measurements?

7 A. So I was looking at — my recollection is that they  
8 built the structure so that the compartment where the  
9 fire originated, according to the fire investigation,  
10 they put that under the calorimeter. So BRE had like  
11 a 9-by-9 calorimeter, which measures oxygen depletion;  
12 that was used to determine the growth rate of the fire  
13 and the potential heat release that that fire gave out.

14 Q. I see. When did this reconstruction testing take place?

15 A. It would have been probably about six, eight months  
16 after the fire, which I can't remember the date.

17 Q. The fire was in the summer of 2009.

18 A. Yes, it would have been probably early 2010, possibly.

19 Q. What were the results of that investigation that the BRE  
20 did?

21 A. I wasn't party to that. So in terms of undertaking the  
22 work, what would happen was I would undertake the work  
23 for the heat release, and then that would be given as  
24 a data package to the team who were working on that. So  
25 because of the — my understanding was it was through

16

1 the — potentially through the Met Police, so I wasn't  
 2 involved with it in terms of anything other than  
 3 producing the data for the heat release.  
 4 Q. After Lakanal, did you or BRE more generally have any  
 5 concerns in relation to cladding and insulation and the  
 6 spread of fire on external clad façades?  
 7 A. My understanding is that a secondary piece of work was  
 8 done through the — under the auspices of the — at the  
 9 time I think it was ODPM, they've changed the name,  
 10 Office of the Deputy Prime Minister. One of the pieces  
 11 of work that BRE has done over the year is to  
 12 investigate fires and how they impact on the Approved  
 13 Document B. So if there's any fire, for example, that  
 14 is what we potentially call erroneous or has led to  
 15 a larger than — a large loss of life or loss of  
 16 property, they would investigate that. And my  
 17 understanding is that after the Lakanal, they did  
 18 an extra piece of work looking specifically at spandrel  
 19 panels. I can't remember exactly when that was written,  
 20 but I have seen it referenced in various things to do  
 21 with the Grenfell Inquiry, so ...  
 22 Q. Were you involved with that?  
 23 A. I wasn't, no, no. The only involvement I think was to  
 24 book them onto the test rig, because what they used for  
 25 that was one of the cladding — the BS 8414 test rigs.

17

1 Q. What was the result of that secondary piece of work?  
 2 A. Again, I wasn't involved with it directly. My  
 3 understanding was they had come to the conclusion that  
 4 the risk associated with fire spread was not a risk that  
 5 they had identified.  
 6 Q. Was there a final report that was produced by the BRE as  
 7 a result of that secondary piece of work?  
 8 A. There is, yes, yes. I understand it's still publicly  
 9 available on the BRE website. I think it was ...  
 10 Q. Did — I'm sorry, do you want to continue?  
 11 A. I was just about to say, I think it was the paper  
 12 authored by David Crowder and Ciara Holland and  
 13 Martin Shipp. It's widely been —  
 14 Q. (Inaudible).  
 15 A. Yes.  
 16 Q. That's fine, I know that.  
 17 So were they, David Crowder and Ciara Holland, the  
 18 ones that were involved within the BRE on that work?  
 19 A. They were indeed, yes, yes.  
 20 Q. Did the BRE change anything in its practice of  
 21 fire testing or anything of the kind as a result of the  
 22 Lakanal House fire and the investigations done by the  
 23 BRE?  
 24 A. Not that I'm aware of, no.  
 25 Q. You tell us in paragraph 16 of your statement

18

1 {BRE00005768/3} that you left the BRE in December 2017  
 2 and you joined Exova Warringtonfire. Is that right?  
 3 A. That is correct, yes.  
 4 Q. Why did you leave the BRE?  
 5 A. I was made an offer, a very good offer to change. I'd  
 6 been there a very long time and I did feel I was coming  
 7 to a stage where I wasn't able to progress with the way  
 8 things were, I think, necessarily, and I thought  
 9 a change would be something that would be worthwhile.  
 10 Q. Is it right that you then left Exova in December 2018  
 11 and went to work for Kingspan?  
 12 A. I did, yes. Indeed, yes.  
 13 Q. Did you apply to Kingspan or were you headhunted?  
 14 A. I was headhunted, yes.  
 15 Q. And presumably they made you an even better offer; is  
 16 that right?  
 17 A. They did, yes, yes.  
 18 Q. The position you took at Kingspan in December 2018 was,  
 19 I think you tell us, as operations manager for the fire  
 20 research centre; is that right?  
 21 A. That is correct, yes.  
 22 Q. Who was your line manager at that time and thereafter?  
 23 A. My direct line manager was a gentleman called  
 24 Jay Humphries.  
 25 Q. How did that fire research centre relate to

19

1 Kingspan Insulation UK Limited?  
 2 A. So just for clarity, at the time I started it hadn't  
 3 been built, so I was there to progress it from paper to  
 4 actually delivering the facility.  
 5 In terms of where we were when I left, we hadn't  
 6 actually started getting any work through it  
 7 specifically, due to a couple of delays in terms of ...  
 8 but my understanding was that this was a global  
 9 resource, so it was a facility that both panels and  
 10 insulation would use, were going to use, or probably are  
 11 using now.  
 12 Q. Right. Just help me with this: the fire research centre  
 13 was a building, was it?  
 14 A. A building, yes, yes.  
 15 Q. Where?  
 16 A. It's based in Holywell in Flintshire. So it's a brand  
 17 new facility.  
 18 Q. Right.  
 19 A. So when I joined, they'd — literally the day I joined  
 20 they'd only just got planning permission for it.  
 21 Q. And it's owned and run by Kingspan, is it?  
 22 A. It is, yes, yes.  
 23 Q. And do you know who runs the fire research centre now?  
 24 A. I don't, no.  
 25 Q. Who ran it during your time at Kingspan?

20

1 A. It was never run. It was being constructed and, just  
 2 before I left, we'd got the reaction to fire suite up  
 3 and running and we were starting to do calibration tests  
 4 and commissioning tests —  
 5 Q. Who was — sorry.  
 6 A. Sorry, say again?  
 7 Q. No, I interrupted you, it's my fault. Please finish  
 8 your answer.  
 9 A. And there was still — they were just installing the  
 10 extract system when I was made redundant, so it had  
 11 never actually put any testing through it as of August  
 12 last year, I think.  
 13 Q. When you left Kingspan, as we know you did — we will  
 14 come to that in a moment — who was in charge of the  
 15 fire research centre? Was that Jay Humphries or  
 16 somebody else?  
 17 A. I wasn't aware. I'd assume it had been because he was  
 18 based in the office there. I was out the door so  
 19 quickly that I didn't have a chance to ask that  
 20 question, and I haven't had any conversations with  
 21 anybody to find out what — how they restructured it.  
 22 Q. Do you know whether — well, let me ask it this way: who  
 23 was the most senior person within Kingspan who gave  
 24 direction in relation to the fire research centre?  
 25 A. The person who was dealing directly was a gentleman

21

1 called Mike Stenson.  
 2 Q. Right.  
 3 A. My understanding is he was the head of innovation for  
 4 Kingspan, and as far as I'm aware and could see from the  
 5 structure, he reported directly to Gilbert McCarthy and  
 6 to Gene Murtagh, to such an extent that Gene Murtagh did  
 7 come and visit the centre. So he was intrinsically —  
 8 he was aware of it, he was here and came and visited.  
 9 Q. Just help me, the idea behind this fire research centre,  
 10 was this to test only Kingspan products or to test other  
 11 manufacturers' products as well?  
 12 A. Predominantly Kingspan products, yes, I think that was  
 13 the ultimate aim. Part of the philosophy behind it was  
 14 that they'd made a large investment in a facility in  
 15 Ireland that they called the IKON Centre, so that was  
 16 a research and development and product development  
 17 facility, which I think they've made clear is there, and  
 18 my assumption is they would be testing material that  
 19 came out of that.  
 20 Q. Right.  
 21 Was the idea that they would test according to  
 22 British Standards at this fire research centre,  
 23 for example BS 8414?  
 24 A. Yes, there was — there were those, and reaction to  
 25 fire, European testing, the 13501 suite as well. So the

22

1 full gamut really, yes, yeah.  
 2 Q. I see.  
 3 So far as you know, is that project, the fire  
 4 research centre, up and running and conducting tests?  
 5 A. I don't know, no.  
 6 Q. Right.  
 7 Was the idea that Kingspan would then use the test  
 8 results from their fire research centre to assist with  
 9 the sale of products?  
 10 A. My understanding was that it would be predominantly  
 11 research and development. So one of the problems in the  
 12 industry is it's very difficult to get into laboratories  
 13 and test facilities because they're pretty busy in terms  
 14 of backlog of work. The idea was that, because of  
 15 research and development and new products, bringing new  
 16 products to market, if you're then putting that into  
 17 a stream where there's already a backlog, it holds up —  
 18 it delays sort of development. So I think the idea was  
 19 to give themselves the ability to develop in-house, get  
 20 it to a stage where they were happy for it to go for  
 21 formal test —  
 22 Q. Right.  
 23 A. — as opposed to going to — doing lots of indicative  
 24 testing and then coming back and trying to figure out  
 25 what happened.

23

1 Q. Yes, I see.  
 2 A. That was my understanding.  
 3 Q. Did the fire research centre have any independent  
 4 oversight or was it —  
 5 A. It was going to be run under the basis of the ISO 17025  
 6 UKAS accreditation. One of the tasks I was working on  
 7 before I left was to pull that together and to make sure  
 8 that the systems were aligned with that standard. One  
 9 of the things I said from day one when I started was  
 10 that if the lab was going to be that way, it would have  
 11 to be run as if it was an independent lab, because of  
 12 the degree of scrutiny that would be required, and one  
 13 of the things is to make it as open and transparent as  
 14 possible. That was my philosophy. Whether that was  
 15 taken from the management, I'm not certain, but that  
 16 would be the philosophy I would have ran it with.  
 17 Q. Right. You say that was one of the things you said from  
 18 day one. To the best of your recollection — and it's  
 19 not very long ago — was that idea taken up and pursued,  
 20 or ...?  
 21 A. Yeah, it was never pushed back. I was tasked to pull  
 22 together the requirements for 17025, yeah, so it was  
 23 never, "Oh, no, don't do that, that's not the way we  
 24 want to go". I think the understanding was we would —  
 25 it would be clear, and if it needed to be audited, it

24

1 would be audited and the traceability would be there.  
 2 Q. Now, Kingspan were clearly a former client of yours at  
 3 the BRE, weren't they?  
 4 A. Indeed, yes, yes.  
 5 Q. Presumably that's how they got to know who you were and  
 6 offered you the job.  
 7 A. Yes, it was, yes, yeah. They — I think it was  
 8 a meeting that I had with Jay Humphries just as I was  
 9 leaving, and he basically said to me, "Oh, had I known  
 10 you were leaving, I would like to have had  
 11 a conversation with you", so ...  
 12 Q. Right. You left Kingspan when?  
 13 A. In June 2019 — sorry, 2020.  
 14 Q. June 2020?  
 15 A. Yeah, so —  
 16 Q. You said a moment ago in your evidence that you were  
 17 "out the door so fast". What happened?  
 18 A. I was just made redundant. It was — basically I was  
 19 just about to go to do something and I got a call to  
 20 come to the office. I was told that, as a consequence  
 21 of the restructuring, they were — it had been decided  
 22 that they no longer needed an operations manager for  
 23 that facility. I was literally ten minutes. No  
 24 come-back. "Come back and get your stuff later".  
 25 Q. Right. Were you surprised about that?

25

1 A. Yes, indeed. I did make the comment, "I don't know how  
 2 you're going to run a facility when you've got nobody  
 3 with any necessarily — any fire experience".  
 4 But I felt that there was nothing I could say and that  
 5 necessarily wasn't my concern because they'd obviously  
 6 decided to get rid of me for one reason or another.  
 7 Q. Did you feel that it was genuine?  
 8 A. Erm ... not necessarily, no.  
 9 Q. What did you think lay behind it?  
 10 A. It wasn't long after that happened that the information  
 11 came out of what Kingspan had been doing in terms of the  
 12 falsification of tests. I think that may have played  
 13 a little part.  
 14 Q. Right.  
 15 A. I've got no substantive evidence to say that, that was  
 16 just a feeling I had.  
 17 Q. At the time?  
 18 A. Yes, yes.  
 19 Q. Now, it's right that you are employed by the BBA, isn't  
 20 it?  
 21 A. I am, yes.  
 22 Q. When did you start work at the BBA?  
 23 A. In September this year.  
 24 Q. September this —  
 25 A. In September 2020, sorry.

26

1 Q. September 2020?  
 2 A. Yeah.  
 3 Q. Okay. And what's your role now at the BBA?  
 4 A. So my role at the moment is I'm a senior — principal  
 5 scientific certification scientist. My role at the  
 6 moment is I'm working out of the Liverpool office,  
 7 working with a team to improve BBA's working practices,  
 8 bringing in new ways of working, and to a certain extent  
 9 try and improve their understanding of fire and fire  
 10 behaviour.  
 11 Q. Yes. In your current role, you say a team to improve  
 12 BBA's working practices, does any of that involve  
 13 examining or putting into practice lessons learnt as  
 14 a result of the Grenfell Tower fire?  
 15 A. Yes, it does, yes, yes. The new managing director is  
 16 very keen to take the lessons and the recommendations  
 17 from the Hackitt Report and all of the lessons that are  
 18 coming out of the Inquiry and making sure that they're  
 19 not going to happen again —  
 20 Q. Right.  
 21 A. — in one way or other. You listen to him, and that's  
 22 top of his agenda, without a doubt.  
 23 Q. Right. And what's that gentleman's name?  
 24 A. It's Hardy Giesler.  
 25 Q. Right. The transcriber might struggle with that, I will

27

1 have to ask you to spell it.  
 2 A. G—I—E—S—L—E—R, I think.  
 3 Q. I think it was probably me then not being able to hear  
 4 it.  
 5 Just tell me, were you provided with a report or  
 6 briefing or document which set out your role of  
 7 implementing these lessons learnt from the  
 8 Grenfell Tower fire when you arrived at the BBA?  
 9 A. No, I wasn't specifically. So when I was employed,  
 10 I wasn't specifically brought in with fire in mind.  
 11 I think what's happened is since I have been here we've  
 12 now got a new technical director, and I think possibly  
 13 there may be things that will utilise my knowledge of  
 14 fire going forward, but that wasn't the principal reason  
 15 I was employed.  
 16 Q. Forgive me for this, but you say "keen to take the  
 17 lessons from the Grenfell Tower fire"; are you able to  
 18 tell us in summary form what those lessons are that you  
 19 are assisting to learn and implement?  
 20 A. You mean specifically in BBA, or across —  
 21 Q. BBA.  
 22 A. I think one of the things ... to be honest, I don't  
 23 really — I can say, but I think it will be my  
 24 interpretation of it. I've not had a conversation with  
 25 anybody directly to say, "This is what we have found

28



1 that is incorrect and this is what we want to improve".  
 2 I think generally it's more along the lines of how we  
 3 improve the construction industry and BBA's part in  
 4 that, as opposed to necessarily BBA directly. Anything  
 5 I say would be sort of supposition as to reading in  
 6 what's going in, because I've not been party to any  
 7 internal investigations. I don't know enough about what  
 8 the shortfalls were to answer that question directly.  
 9 Q. It's right, isn't it, that in the space of  
 10 three years — summarising it — you went from test  
 11 house to test house to client to certifying body?  
 12 A. I did, yes, yes.  
 13 Q. Can we conclude in general from those rapidly sequential  
 14 roles that the relationships between client, testing  
 15 house and certifier were and remain close?  
 16 A. I think it's like with any industry, there is a certain  
 17 amount of ... you work — in terms of my involvement  
 18 with the BBA, it was very limited in what I did at BRE,  
 19 for example. But the skills that I have are  
 20 interchangeable and relevant to what BBA do, so — and  
 21 it's part of — still part of the construction industry.  
 22 So they are interchangeable, yes, and there is this —  
 23 yeah, the client relationship and the contractor is —  
 24 yes, yeah.  
 25 Q. Yes.

29

1 I'm going to change to a different topic, which is  
 2 your knowledge of fire regulation.  
 3 Given your background and your role, Mr Clark, would  
 4 you say that you had a good understanding of the  
 5 regulations applicable in England and Wales governing  
 6 fire safety?  
 7 A. Indeed, yes, yes. I wouldn't say it was — if you asked  
 8 me something, I would know where to go to look it up,  
 9 it's not encyclopaedic in that way, but I would say,  
 10 yes, I would know.  
 11 Q. Yes.  
 12 Can I show you paragraph 22 of your statement at  
 13 page 5 {BRE00005768/5}. You say there:  
 14 "I have personally been involved in BS 8414 testing  
 15 since 1999 and have worked as part of the team to  
 16 develop both BS 8414 Part 1 (BS 8414—1) and BS 8414  
 17 Part 2 (BS 8414— 2). The work involved undertaking  
 18 testing on the various products both with and without  
 19 fire barriers. The initial work formed the basis of  
 20 BS8414—1, which was published in 2002."  
 21 Now, when you say you were involved in BS 8414  
 22 testing since 1999 — and that's three years, isn't it,  
 23 before publication of the standard in 2002?  
 24 A. Yes.  
 25 Q. When you were involved, did you mean involved in the

30

1 preparatory work for the testing?  
 2 A. Yes. So at that time the BRE was still — still had its  
 3 Cardington laboratory, and there were a number of test  
 4 walls at that laboratory which were used to form the  
 5 basis of the BR 135 document. So in that document there  
 6 are a number of tests that myself and others undertook  
 7 as part of that document, and also went in towards the  
 8 8414.  
 9 Q. What did those tests involve?  
 10 A. So at the time, most of the systems that were on the  
 11 market were what we call external wall insulation  
 12 systems, and they would either be in a fibre — mineral  
 13 fibre system or an expanded polystyrene system. They  
 14 would generally be mechanically fixed back to  
 15 a blockwork substrate, so the part 1 test is for the  
 16 blockwork substrate wall, and then they would be  
 17 rendered and — with a decorative finish and  
 18 a reinforcing mesh over the top of them. So they were  
 19 what we call external wall insulation systems.  
 20 Q. I see.  
 21 Now, the 1999 date for start pre-dated, didn't it,  
 22 the All-Party Parliamentary Group Inquiry in 2000 into  
 23 the safety of cladding as a result of the Garnock Court  
 24 fire in 1999?  
 25 A. I can't say, to be honest. I was — at the time

31

1 I wasn't aware of that. It was just a job I was doing.  
 2 So that was beyond what I was — where I was. I was  
 3 more a technician at that point.  
 4 Q. I see.  
 5 After the APPG Inquiry in 2000, did you get to see  
 6 or get any training on the findings of that Inquiry, its  
 7 conclusions?  
 8 A. I would say no.  
 9 Q. Were the BS 8414 test and the BR 135 criteria something  
 10 developed by the BRE from 1999 on its own initiative, or  
 11 was it responding to demands from central government to  
 12 improve fire safety?  
 13 A. My understanding is it was driven from central  
 14 government, yes, yes.  
 15 Q. Right. So can we say that it was driven by central  
 16 government even before the Garnock Court fire in 1999?  
 17 A. I ... to be honest, I don't — I can't answer that  
 18 question. Before 1999 I wasn't — I didn't have the  
 19 understanding at that time to be able to answer that  
 20 question.  
 21 From this position now, I would say probably yes,  
 22 from my knowledge now. But in 1999 I would be — would  
 23 have struggled to answer that question.  
 24 Q. That's very fair.  
 25 Now, we know from BRE's website that the BRE was

32

1 privatised by Michael Heseltine, who was the then Deputy  
2 Prime Minister, in March 1997.

3 When you started working on BS 8414 in 1999, was it  
4 the goal to use the BS 8414 test to BRE's commercial  
5 advantage?

6 A. No, not that I was aware, no. There would be  
7 a commercial advantage for any test, but the thing  
8 with — the fact it became a British Standard gave  
9 anybody in the world the ability to undertake that test.  
10 So if it was — I think particularly if it was going to  
11 be primarily for BRE's commercial advantage, it wouldn't  
12 have been published as a British Standard. But, given  
13 BRE's position at the time, it inherently became  
14 something that BRE did, because it was the only  
15 organisation that had the facilities to undertake that.

16 Q. Exactly, and I was going to suggest to you that it would  
17 have had first-mover advantage, wouldn't it, if BS 8414  
18 became, as it did, a British Standard?

19 A. I suppose the answer would be yes, but, as I say, it's  
20 like anything, if you're at the early adoption stage and  
21 you do the research, then if you've got that facility  
22 there already, you're at that advantage straightaway.  
23 Why particularly other organisations didn't choose to  
24 take up the testing, I don't particularly know.  
25 I wasn't commercial in that regard, and that would be

33

1 a question you would have to sort of ask other people.  
2 And in reality, until the fire at the Grenfell Tower,  
3 there weren't many other organisations taking — doing  
4 8414 testing.

5 Q. No, but from the start of your involvement, was it the  
6 case the BS 8414 test was a potential source of revenue  
7 for the BRE?

8 A. I'd never heard it in that terms, no. It's a test that  
9 is done for — when I started, I was never in that  
10 position where I was talking about the financial aspects  
11 of it. I was a technician, and I wasn't party to those  
12 conversations. It's a question I — it would only be  
13 supposition as to whether that was their intention.

14 Q. I see.

15 Can you tell us, from your own knowledge, how the  
16 BRE was going to make its money, to stand on its own two  
17 feet, having been privatised from 1997?

18 A. No. Again, it would be my interpretation of what was  
19 there. I'd never seen anything to say, "This is what  
20 we've got to do, we've got to target this, we've got to  
21 do that", I can't answer that question.

22 Q. You see, the reason I'm asking you is this hypothesis:  
23 having been privatised, the BS 8414 test would be  
24 a source of revenue, so the more tests you did, the more  
25 revenue you would make. Can you comment on that?

34

1 A. Well, that's — yeah, it goes without saying, really,  
2 yes, yeah. I agree, yes.

3 Q. And the more successful tests you did for a client, the  
4 more they would want to come back and —

5 A. Erm —

6 Q. — have confidence that you would pass their products.

7 A. No, I would argue it was the other way round, in a way,  
8 because if a client does a successful test, they go away  
9 and they may not come back. But if they're doing  
10 unsuccessful tests, they may need to come back. But  
11 we're not — the whole idea of the 8414 test was to make  
12 sure that systems were compliant with Building  
13 Regulations, and ultimately I don't think they made  
14 a lot of money out of it. It was quite an expensive  
15 test.

16 Q. To your recollection, did anybody at the time take any  
17 steps to consider whether there were any inherent  
18 conflicts of interest within the BRE in carrying out  
19 tests designed to protect life safety for money?

20 A. No, because every single test that anybody does in any  
21 sphere of regulation or require — you could argue is  
22 BSI in the same position when they're checking PPE? Any  
23 organisation that has a remit to undertake testing for  
24 life safety for commercial gain would always be accused  
25 of doing that.

35

1 I don't think BRE was in a position where they ever  
2 made lots and lots and lots of money. We're not a blue  
3 chip company. And even if they did, the way the  
4 organisation is structured is that it's  
5 a not-for-profit — any profit that was made goes back  
6 into research and PhDs and investment in making the  
7 built environment better. So it wasn't going to  
8 shareholders in that regard. There was nobody driving,  
9 "You have to do this because I'm not going to get my  
10 dividend at the end of the year".

11 Q. I understand that, I'm just seeking to understand  
12 whether, as a matter of fact, there were any such  
13 investigations or considerations.

14 What about later on? Were there any steps taken to  
15 examine the propriety of these commercial pressures at  
16 any time before you left?

17 A. That's a question I cannot answer because it was  
18 a question I was — I wasn't involved in that regard of  
19 the business. That's probably — if you need to ask  
20 that question, that's somebody like Steve Howard or  
21 Tony Baker may be able to answer that question, but  
22 I can't. I can't answer that question.

23 Q. Very well.

24 Were you aware that Approved Document B did not  
25 mention the criteria in BR 135 as an alternative route

36

1 to compliance in paragraph 12.5 of Approved Document B,  
 2 until the 2006 edition of ADB was published in  
 3 April 2007?  
 4 A. I wasn't aware of it directly, no. No.  
 5 Q. What was your understanding of why sponsors were  
 6 carrying out or wanting you to carry out BS 8414 tests  
 7 before 2006/2007, when the alternative route to  
 8 compliance did not exist in Approved Document B?  
 9 A. Sorry, could you repeat that question? Sorry.  
 10 Q. Why did sponsors want you to carry out BS 8414 tests  
 11 before the BS 8414 test was enshrined in Approved  
 12 Document B?  
 13 A. Again, I don't know the answer to that. Was — did you  
 14 say BR 135 was not until the 2006 version, or 8414 as  
 15 a whole?  
 16 Q. The criteria in BR 135, as a route to compliance.  
 17 A. Right. But my understanding was that BS 8414 was still  
 18 a test you could undertake —  
 19 Q. From 2002?  
 20 A. Yes, yeah. It still gave the ability to get onto  
 21 high-rise buildings, and it was a demonstration of the  
 22 system's performance in terms of fire spread. So it was  
 23 still a valid test.  
 24 As with all of these things, the evolution of safety  
 25 and understanding changes, and clearly there was

37

1 a decision made in 2006 that the criteria set out in  
 2 BR 135 was something that the government body thought  
 3 was a — is something to attain, and a minimum standard  
 4 that systems should achieve.  
 5 Q. Yes, but given that the alternative route to compliance  
 6 with ADB, namely by passing a BS 8414 full system test  
 7 and meeting the BR 135 criteria, was not enshrined in  
 8 the regulation until the 2006 amendments to ADB, the  
 9 question is: why did sponsors carry out those tests  
 10 before that date?  
 11 A. That's a question I couldn't answer. At that time,  
 12 around 2006, I wasn't in a position where they were the  
 13 conversations I was having with people. That would be  
 14 the likes of my colleagues Sarah Colwell,  
 15 Richard Colwell, who were predominantly working for  
 16 that. So I was in more of a technician role at that  
 17 point, so it's a conversation I never had with anybody  
 18 and was necessarily aware of.  
 19 Q. I understand that.  
 20 A. It could be that — and this is just my pure  
 21 supposition — the regulations hadn't been updated for  
 22 a while, and it was just decided — I think there was  
 23 a programme of updating the Building Regulations in  
 24 2006, some of which I was involved with, and it may just  
 25 have been that it was a prudent time to put it in.

38

1 Q. Did the BRE think or see it that if BS 8414 system tests  
 2 and BR 135 became a formal alternative route to  
 3 compliance with ADB, then that would work to the BRE's  
 4 commercial advantage?  
 5 A. Again, I wasn't party to commercial conversations like  
 6 that, so it would be pure supposition to — any answer  
 7 I would give would be just my supposition as to ...  
 8 Q. Did the BRE play any part, do you know, in pushing the  
 9 BS 8414 test and the BR 135 criteria into becoming  
 10 enshrined in Approved Document B as the alternative  
 11 route to compliance?  
 12 A. I think to a certain extent you need to understand the  
 13 history of BRE and how it works with government and  
 14 where it sits in terms of ... because BRE and  
 15 particularly the Fire Research Station as was, because  
 16 they became — they amalgamated in 2000—and — sorry, in  
 17 1997, 1996/1997, that was the Government's prime source  
 18 of information for regulation, particularly around fire  
 19 and that, and they used BRE in that way as their source  
 20 of information, is my feeling for what that did. Even  
 21 though the organisation was privatised, it was still  
 22 their main go-to facility to get the answer — the  
 23 questions answered.  
 24 Q. Yes. I'm not quite sure that answers my question, but  
 25 I'll ask it again: did the BRE, do you know, play any

39

1 part in pushing the BS 8414 test to BR 135 criteria into  
 2 becoming enshrined in Approved Document B as the  
 3 alternative route to compliance?  
 4 A. Again, because I wasn't party to that, I can't say  
 5 definitively. I would be very surprised if they  
 6 weren't, but not because there was a commercial  
 7 advantage; because it was the right thing to do to  
 8 address the issues that had come to light.  
 9 Q. Who was involved, do you know, from the BRE's side in  
 10 that campaign, as one way of putting it, that effort?  
 11 A. My understanding is that was primarily driven by  
 12 Dr Sarah Colwell, and ... who else? Maybe  
 13 Dr Debbie Smith, maybe. I can't recall ... I think  
 14 Dr Sarah Colwell was probably the main driver of that.  
 15 Yeah.  
 16 Q. Does the name Brian Martin ring any bells with you?  
 17 A. Yes, I know Brian, yes.  
 18 Q. Was he involved in this effort?  
 19 A. I don't think he was, no, I think he had a different  
 20 remit at his time in BRE.  
 21 Q. He was employed by the BRE, I think, and seconded to the  
 22 Government department which later became DCLG and now  
 23 MCHLG, and worked there three days a week to lead on  
 24 getting BS 8414 and BR 135 into ADB.  
 25 Is what I've just said correct, to your knowledge?

40

1 A. I knew he was seconded to — was it ODPM at the time,  
 2 Office of the Deputy Prime Minister? I wasn't aware of  
 3 what he was doing there, no. It's not a conversation  
 4 I'd ever had with him, and he never said, "Oh, this is  
 5 what I'm doing there". So I'm not aware of that. I'm  
 6 just aware he was seconded.  
 7 Q. Right.  
 8 Would it be fair, from your own knowledge, to  
 9 describe BS 8414 and BR 135, which is the criteria you  
 10 use, as a joint project as between the BRE on the one  
 11 hand and government on the other, with Brian Martin on  
 12 both sides?  
 13 A. Yes, I think that would probably be a fair thing, yes.  
 14 From where I stand, obviously, I've got nothing in terms  
 15 of what I've seen in terms of paperwork or audit trail  
 16 to say that, but I think the way it worked, I think that  
 17 would be a fair assumption, yes.  
 18 Q. Do you remember whether Kingspan was involved in any way  
 19 in contributing to the discussions about whether or not  
 20 an alternative route to compliance should be written  
 21 into the regulation where combustible insulation was to  
 22 be used within a cladding system?  
 23 A. My understanding is, and having sort of — if you see  
 24 British Standards, there's normally something at the  
 25 beginning of the standard where it lists participants

41

1 who have been used to draw together the standard, and  
 2 that is usually not individual organisations, but  
 3 I think British — BSI, for example, would look to the  
 4 likes of BBA, BRE, Warringtonfire, BSI obviously, and  
 5 I think at the time when the first version of the 8414,  
 6 I think an organisation called BRUFMA were involved,  
 7 which is the British Urethane Manufacturers Association,  
 8 I think they were part of the committee that drew that  
 9 up, but that was also as well the likes of Rockwool and  
 10 other organisations. I don't know whether Kingspan  
 11 specifically were, but I know, in terms of what they  
 12 made, their trade association was, I think, if I recall.  
 13 Q. So Kingspan and Rockwool as voices within BRUFMA who  
 14 would be a consultee for British Standards?  
 15 A. So BRUFMA were the Urethane Manufacturers Association,  
 16 so Rockwool wouldn't sit under that, but they may have  
 17 been represented by another body, another trade  
 18 association. I can't remember what they would come  
 19 under.  
 20 Q. Going back to BR 135 for a moment, we know that the 2003  
 21 edition of that publication was co-authored by  
 22 Brian Martin. Did you have any input into the writing  
 23 of that edition?  
 24 A. Not the writing, no, no. I was not involved in that.  
 25 Q. What about the research for it?

42

1 A. 2000—and — no, I don't think anything specifically new  
 2 was put in, unless they used the test data for the  
 3 rainscreen, appendix B I think, isn't it, for the  
 4 BS 8414—2. So the data we'd produced as part of that  
 5 research for that may have gone in, but I wasn't  
 6 involved directly, no.  
 7 Q. Did you work with Brian Martin on that edition, even on  
 8 the research side?  
 9 A. Not that I recall, no. Not third edition, no. I think  
 10 by that time most of the research had been done anyway.  
 11 Q. Can I ask you to look, please, at paragraph 20 of your  
 12 statement at page 4 {BRE00005768/4}. You say there, in  
 13 the fourth line down, halfway down the paragraph:  
 14 "It is important to note that each test report and  
 15 each classification report is applicable only to the  
 16 particular system tested; the fact that a system with  
 17 one or more specified components has been classified to  
 18 BR 135 says nothing about whether a different system  
 19 containing the same components will or will not achieve  
 20 such classification."  
 21 Was that an understanding of BS 8414 and BR 135 that  
 22 you always had?  
 23 A. Yes, it's a system test.  
 24 Q. Did you at any point form the view that the UK  
 25 construction industry was not fully aware of that

43

1 limitation?  
 2 A. In terms of a personal view or ...?  
 3 Q. Personal professional view, your view at work.  
 4 A. I think it was — you needed to explain it to them,  
 5 I think, on occasions, yes, yeah, particularly if people  
 6 weren't necessarily understanding of the standard.  
 7 They'd heard about it and they understood there was  
 8 a requirement for it, but they wouldn't necessarily  
 9 understand it was a system test unless you explained it  
 10 to them. I think there was a ... it's like any test,  
 11 sometimes people hear these things but you need to  
 12 explain actually what it means.  
 13 Q. Did the BRE, to your knowledge, take steps positively to  
 14 make sure that its clients, the likes of Kingspan and  
 15 Celotex perhaps, were aware that there was this gap in  
 16 knowledge?  
 17 A. I think they did, yes, yeah. I've seen over the years  
 18 several presentations that were given by the likes of  
 19 Sarah Colwell and Stephen Howard and I think  
 20 Debbie Smith and others, where they do go out and say,  
 21 "Look, this is a system test, this is the regulation  
 22 that it's designed to meet, these are the routes that  
 23 you can undertake", and I have seen definitely  
 24 presentations of it in a forum where it would be  
 25 appreciated and understood, yes. I think they went out

44

1 of their way to do that, yeah.  
 2 Q. From 2003 until it was revised in 2013, and perhaps even  
 3 after that, did you consider that BR 135, in either  
 4 edition, second or third, was clear enough that BS 8414  
 5 was a full system test?  
 6 A. To be honest, I — the role I was in, I wasn't really  
 7 considering BR 135. I think I say in my statement that  
 8 I was predominantly on the testing side, and the  
 9 interpretation and issuing of BR 135 was done by other  
 10 people in the organisation. So it wasn't something  
 11 I concerned myself with day to day.  
 12 Q. Was there a concern generally at the BRE that it was not  
 13 clear to customers that a system which had passed  
 14 a BS 8414 test had to be replicated exactly in its  
 15 application on a building, and any deviation would make  
 16 the system so applied non-compliant?  
 17 A. It's not something I'd heard generally, but it would be  
 18 explained to clients in that respect, yes. So it wasn't  
 19 something that BRE were hiding, that this is a system  
 20 test, and that's it, yes.  
 21 Q. To your understanding, did clients — in other words the  
 22 likes of Kingspan and Celotex, which is what I mean by  
 23 that in this question — fully understand that  
 24 principle?  
 25 A. Erm ... yes, I think so, yes. Yes.

45

1 Q. Did you ever have occasion to have to spell it out to  
 2 a client?  
 3 A. Not that I can recall, no. No. Not directly to say —  
 4 if somebody had said, "Oh, if I do X, can I do Y?" No,  
 5 I don't — I can't ever recall having sat down to  
 6 somebody and say, "Look, you do understand this is  
 7 a system test, you can only do this". I think — it  
 8 wasn't the sort of conversation I'd ever have, no.  
 9 Q. Given that the BRE tests and classification reports it  
 10 produced refer only to the particular test system  
 11 containing the products installed at the time of the  
 12 test, do you agree that it was vitally important always  
 13 that the component parts of the test are fully and  
 14 accurately identified in the test report and in the  
 15 classification report?  
 16 A. Yes, without a doubt.  
 17 MR MILLETT: I'm now going to ask you about BRE processes  
 18 and procedures.  
 19 Mr Chairman, I'm unlikely to get to finish this  
 20 before the break, but I could make a reasonable start on  
 21 it.  
 22 SIR MARTIN MOORE-BICK: What would you prefer to do,  
 23 Mr Millett? We could take the break slightly early, or  
 24 you can run on for a bit if you would rather do that.  
 25 MR MILLETT: I think I can run on for a little bit, and if

46

1 I have to stop midway through the topic, there is no  
 2 real problem with it.  
 3 SIR MARTIN MOORE-BICK: All right, carry on then.  
 4 MR MILLETT: I'll carry on for a little bit.  
 5 At the times when you were running the cladding  
 6 testing programme, were you fully familiar with the BRE  
 7 standard procedures?  
 8 A. The BRE had a plethora of standard procedures, it  
 9 depends which one you're talking about.  
 10 Q. All of them. All of them that applied to your testing.  
 11 A. The ones that applied to testing, as far as I was aware,  
 12 yes, yes. It's like anything: if you don't know  
 13 something, you don't know you don't know it, in a way.  
 14 Q. Yes, I understand.  
 15 Were you responsible for ensuring that the standard  
 16 procedures were followed in respect of tests carried  
 17 out?  
 18 A. For what period, sorry, are you talking about?  
 19 Q. For the period that you were running the testing  
 20 cladding programme, which I think was from 2004, as you  
 21 told us.  
 22 A. Yes, yes, I was aware, yes, yeah.  
 23 Q. At paragraphs 38 and 39 of your statement  
 24 {BRE00005768/8} — I don't think we need to go to it —  
 25 you set out the role of the client/project officer. Is

47

1 that one person, the client/project officer?  
 2 A. Not necessarily. Did ... so in terms of delivery of the  
 3 test, the testing, the way — the amount of staff we had  
 4 then, probably, yes, it was predominantly me, I would  
 5 have said. It depends at what point in the process  
 6 you're talking about, because the way it was structured  
 7 was that I would be handed the testing part of the  
 8 contract. So the likes of Tony Baker or Steve Howard  
 9 may have done the preliminary work to get the client to  
 10 sign up to the contract; I would then take them through  
 11 the testing process. So in terms of the testing side of  
 12 it, then I would say yes, that was one — predominantly  
 13 one person.  
 14 Q. Is that the same as the officer in charge in the list of  
 15 test personnel that you provide at paragraphs 42 to 46  
 16 of your statement {BRE00005768/9}?  
 17 A. Yes, because what would tend to happen was that I would  
 18 be the officer in charge and then my colleague would be  
 19 the safety officer, so yes, yes, I would say. Primarily  
 20 because it was — I was the person doing most of the  
 21 testing anyway, so they were dual role.  
 22 Q. Right. I mean, who would be responsible for ensuring  
 23 that, as you put it in your statement at paragraph 38  
 24 {BRE00005768/8}, all required information regarding the  
 25 materials, fixings and names of the materials being

48

1 installed had been provided?  
 2 A. Day-to-day on site, that would more than likely be my  
 3 role. There was an occasion where we — I wasn't  
 4 necessarily always there, so I would ask other people to  
 5 do it, and that did include to a certain extent  
 6 Stephen Howard, if I was out. On occasion, we had  
 7 an apprentice who sometimes would do that, but then  
 8 I would just — I would check. So I would say  
 9 predominantly me because I was the person mainly running  
 10 the test.  
 11 Q. In the next paragraph, 39, you say that that person  
 12 would request a sample of each of the components used in  
 13 the construction of the test system and, where possible,  
 14 photos are taken. Would that person be you again, where  
 15 you were in charge of the test?  
 16 A. I think towards the latter part of — before I moved on  
 17 to other things, that was being done by other people.  
 18 There was an occasion where I think Steve Howard had  
 19 decided he wanted other people to become involved, and  
 20 I think at least one of the Kingspan Trespa reports was  
 21 done by a gentleman called ... oh, I've forgotten his  
 22 name, sorry. Connor McIntosh.  
 23 Q. When did Steve Howard decide that he wanted other people  
 24 to become involved?  
 25 A. I think that was probably — oh, 2016, maybe. 2015/16.

49

1 Q. When samples were provided, what would happen to them?  
 2 A. As in would we keep samples, do you mean?  
 3 Q. They would come in, and what would be the process? The  
 4 samples would arrive, where would they go?  
 5 A. So the way the Burn Hall worked is that we had four test  
 6 facilities, four test walls that we would use, and the  
 7 client would be allocated an area within the sort of —  
 8 in front of the wall, and their material would be  
 9 delivered to — as close to the wall as we could. They  
 10 would then take control of their materials, and in terms  
 11 of the — how it would work for me to go and get the  
 12 information, I would go down at some point when it was  
 13 convenient and say, "Look, I need to come down, can you  
 14 pull together all of the components that you are using  
 15 for me", and I would photograph them and then they would  
 16 be given back.  
 17 Q. I see. So was the system that was operated that for  
 18 every component of a test that came into the Burn Hall,  
 19 you or perhaps one of your assistants would photograph  
 20 them and log them?  
 21 A. Yes, yes, but they weren't kept, they were just recorded  
 22 on a photograph. We didn't keep samples.  
 23 Q. You didn't keep the samples, but did you keep the  
 24 photographs?  
 25 A. Yes, the photographs were kept, yes.

50

1 Q. So you kept a log of each and every sample with  
 2 a photograph that came into the Burn Hall for any  
 3 particular test; is that right?  
 4 A. Yes, yes.  
 5 Q. I see.  
 6 You say you would take photographs where possible;  
 7 when would it not be possible to take photographs?  
 8 A. Sometimes ... yeah, I don't know really why I put there  
 9 "where possible". Probably there was an occasion where  
 10 it wasn't possible.  
 11 Q. So could we say that it was the invariable practice of  
 12 the BRE —  
 13 A. Yes.  
 14 Q. — to photograph samples as they came into the  
 15 Burn Hall?  
 16 A. Yes, yes.  
 17 Q. Thank you.  
 18 A. I agree.  
 19 Q. Is it right that the project officer would also record  
 20 the details of each component from their own  
 21 examination?  
 22 A. Most of the time the photograph would suffice. So there  
 23 weren't sort of written descriptions of things. The  
 24 photograph was sufficient in most cases. One of the  
 25 practices I tried to always do was to make sure that we

51

1 got the packaging that the material came in photographed  
 2 as well as the item, because obviously if you take  
 3 a picture of a screw, it means nothing if you don't  
 4 actually know what it refers to. So we would  
 5 predominantly take a picture of the box that it came in  
 6 and the label on the box.  
 7 MR MILLETT: Yes, thank you.  
 8 Mr Chairman, we're mid-topic, as I predicted we  
 9 would be, which is no bad thing, but this might be  
 10 a convenient moment for a break.  
 11 SIR MARTIN MOORE-BICK: All right, if that's convenient to  
 12 you, Mr Millett, I think we'll take a break.  
 13 Mr Clark, I said we would have a break during the  
 14 morning. We will take it now. We will resume, please,  
 15 at 11.35.  
 16 I will remember this time to remind you, please, not  
 17 to talk to anyone about your evidence during the break.  
 18 THE WITNESS: Not a problem.  
 19 SIR MARTIN MOORE-BICK: All right, we will see you a bit  
 20 later then. Thank you very much.  
 21 THE WITNESS: Thank you.  
 22 (11.20 am)  
 23 (A short break)  
 24 (11.35 am)  
 25 SIR MARTIN MOORE-BICK: Welcome back, everyone. We are now

52

1 in a position to resume hearing evidence from Mr Clark.  
 2 Mr Clark, are you there? Can you hear me and can  
 3 you see me?  
 4 THE WITNESS: I can hear you and see you, sir, yes.  
 5 SIR MARTIN MOORE—BICK: Thank you very much.  
 6 When you are ready, Mr Millett, on you go.  
 7 MR MILLETT: Thank you, Mr Chairman.  
 8 Mr Clark, can I just ask you, please, to go back to  
 9 the transcript from this morning, and I will put the  
 10 exchange we had at page 26 {Day95/26:7}. I don't think  
 11 it's necessary for it to be displayed.  
 12 I was asking you about the circumstances in which  
 13 you left Kingspan, and you said that "they'd obviously  
 14 decided to get rid of me for one reason or another".  
 15 I asked you:  
 16 "Question: Did you feel that it was genuine?"  
 17 "Answer: Erm ... not necessarily, no.  
 18 "Question: What did you think lay behind it?  
 19 "Answer: It wasn't long after that happened that  
 20 the information came out of what Kingspan had been doing  
 21 in terms of the falsification of tests. I think that  
 22 may have played a little part ...  
 23 "I've got no substantive evidence to say that, that  
 24 was just a feeling I had.  
 25 "Question: At the time?

53

1 "Answer: Yes, yes."  
 2 My question, following on from that, is: the feeling  
 3 that you had at the time, was that based on any  
 4 discussions or conversations or documents that you had  
 5 seen at the time which led you to have that feeling?  
 6 A. No. No. It was just the way it was — how quickly it  
 7 was done. I'd been there for 18 months, and my  
 8 understanding was that I was a key part of what they  
 9 wanted to do, and all of a sudden you're called into  
 10 an office saying, "We want you to leave". And it was  
 11 only really when it was disclosed to Dr Smith at BRE  
 12 about these tests which they have subsequently withdrawn  
 13 that I sort of put two and two together and thought:  
 14 have they just used COVID as an excuse for something, or  
 15 had they ... yeah, it just didn't seem to sort of fit.  
 16 Q. That was after you left?  
 17 A. After I left, yes.  
 18 Q. So at the time you were handed your redundancy notice,  
 19 is this right, you didn't connect that with what you  
 20 later discovered about the falsification of the —  
 21 A. No. No, no.  
 22 Q. Thank you for clarifying that.  
 23 I want to just continue exactly where I left off, if  
 24 I may, then, with paragraph 41 of your statement,  
 25 please, if we can go to paragraph 41 on page 9

54

1 {BRE00005768/9}. You say there:  
 2 "The responsibility for comparing drawings and the  
 3 test specimen as delivered to BRE was usually the  
 4 responsibility of the Test officer and a senior staff  
 5 member who would sign off the final test report. If  
 6 errors or omissions were spotted these would usually be  
 7 rectified through the re-issue of amended drawings with  
 8 the original drawings held on file. It has been known  
 9 for drawings to be issued by the client post-test which  
 10 would subsequently be checked as part of the report  
 11 drafting and signing-off process."  
 12 Do you see that?  
 13 A. Yes.  
 14 Q. Sorry, I seem to have lost you.  
 15 A. Can you hear me?  
 16 Q. Yes, I've lost my image of everybody, but I have the  
 17 document.  
 18 My question is: the visual inspection that's carried  
 19 out, would that be carried out by the project officer or  
 20 officer in charge?  
 21 A. By the project officer. So the officer in charge, just  
 22 for clarity, would only be there during the test itself.  
 23 So it was a role that was given during the test, just to  
 24 be clear.  
 25 Q. If we go to paragraph 41 of your statement, please,

55

1 page 9 {BRE00005768/9}, we can see that you refer to the  
 2 test officer there. That's the project officer, is it?  
 3 A. Yes, yes.  
 4 Q. Right. Then you say also that a senior staff member who  
 5 signed off the final report would also make this  
 6 comparison. Would that person be relying on the photos?  
 7 A. To a certain extent, and the drawing, yes. Both,  
 8 really, yes.  
 9 Q. Can we go to paragraph 50 of your statement, please, at  
 10 page 11 {BRE00005768/11}. You say a test file was also  
 11 required to be prepared and maintained in respect of  
 12 each test. Would that be an electronic copy or a hard  
 13 copy?  
 14 A. It depended what the material was. I think I say in  
 15 there some of the things, for example, large data sets  
 16 of thermocouple data would be kept electronically.  
 17 Predominantly all of the pictures and the photographs  
 18 and any drawings would be printed off and put into  
 19 a paper file, and that would also include the risk  
 20 assessment, method statement and MSDS sheets and that  
 21 type of thing for the materials. But the majority of  
 22 the things would go in there, yes.  
 23 Q. I see, and where would those files be kept?  
 24 A. Erm, day to day they would be on my desk, predominantly,  
 25 and then they — once they were complete, they would be

56

1 passed up to the senior staff member.  
 2 Q. Right. I see.  
 3 So just summarising your evidence at paragraph 50,  
 4 can we just be clear that the test file was required to  
 5 include, first of all, drawings of the system; yes?  
 6 A. Yes.  
 7 Q. Delivery notes of materials received by the BRE for the  
 8 test system; yes?  
 9 A. Where we could get hold of them. What you need to  
 10 appreciate is that we took the materials on behalf of  
 11 the client, we weren't in control of them. So they  
 12 would be delivered, if we could get a copy of the  
 13 delivery note we would try to take it, but it wasn't  
 14 always the case that we would always take it.  
 15 Ultimately the materials are the client's materials.  
 16 Q. What about notes taken by the test officer detailing the  
 17 construction of the test system, that would be on the  
 18 test file, would it?  
 19 A. It would be, yes, that should be, yeah.  
 20 Q. Right.  
 21 A. Some of these, don't forget, would have been done  
 22 electronically as well, so they would be in a filing  
 23 system on the network drives.  
 24 Q. I see. And photographic evidence of construction of the  
 25 test system and the materials and components used in

57

1 that construction, those would also be on the test file,  
 2 would they?  
 3 A. Yes. What tended to happen was that they would be  
 4 stored centrally on a — on the IT system first, and  
 5 then in preparation for when the test had been completed  
 6 and the file was put together with the first draft of  
 7 the report, then they would be printed off. But they  
 8 wouldn't be kept — they wouldn't be printed off as  
 9 a matter of course.  
 10 Q. No, but they would be kept on the test file?  
 11 A. Yes.  
 12 Q. So if you wanted to go back and review it later, they  
 13 would be there?  
 14 A. They would, yes, yes.  
 15 Q. And then there would also be, would there, a systems and  
 16 components photo collection sheet; is that right?  
 17 A. Yes, yes. Not always in a sheet, but, yeah, there would  
 18 be — they would be taken as a series of pictures, yes.  
 19 Q. That would be to ensure photographs of the relevant and  
 20 important components were taken; correct?  
 21 A. Yes, yes.  
 22 Q. Are those the updated documents that you drafted in  
 23 2013?  
 24 A. 2013? Yes, I think so.  
 25 Q. By which I mean the cladding test data file and report

58

1 preparation sheet.  
 2 A. Yes, yes.  
 3 Q. Yes?  
 4 A. Yes. Just to be clear, they wouldn't necessarily always  
 5 be put into that format, but that was the basis to say,  
 6 "This is what you need to collect". So they may have  
 7 just been a series of photographs. They wouldn't  
 8 necessarily always have been put directly onto a sheet  
 9 in that regard.  
 10 Q. I see. And would responsibility for completing those  
 11 sheets or that checklist also rest with the officer in  
 12 charge, as you describe that person?  
 13 A. No. The project officer really.  
 14 Q. It's the project officer, right.  
 15 A. Just to be clear, so the officer in charge — for health  
 16 and safety, it had always been the thing at BRE that you  
 17 would have designated people who were in control of  
 18 certain things during the test so that there was  
 19 a defined role for each person. An officer in charge is  
 20 specifically for the test only, not for the preparation  
 21 of the information. So that person may only necessarily  
 22 come in on the day of the test. They wouldn't be there  
 23 at other points.  
 24 Q. I see. I follow that.  
 25 Can I show you {BRE00005769/302}, please. This is

59

1 a document entitled "Standard procedures for undertaking  
 2 BS8414 parts 1 & 2 Tests", and it was exhibited to your  
 3 statement, so I am assuming you're familiar with it.  
 4 A. I am indeed, yes, I think I pulled it together.  
 5 Q. And it sets out a checklist of actions which can be  
 6 undertaken by anyone, but need, I think, to be  
 7 signed off by the person identified. Is that correct,  
 8 in general, as a description?  
 9 A. Yes, yes.  
 10 Q. You can see "TO" is test officer, "OIC", officer in  
 11 charge, "SO" is safety officer. So can we see clearly  
 12 the distinction there between the test officer and the  
 13 officer in charge?  
 14 A. Yes, yes.  
 15 Q. Yes, I see.  
 16 Does this document date to that exercise in 2013  
 17 that you did?  
 18 A. Sorry, could you remind me of which exercise you're  
 19 talking about?  
 20 Q. Did you compile this document in 2013 or —  
 21 A. Oh, I compiled this document, yes, it was, yes.  
 22 Q. Did it formalise what was already common practice within  
 23 the BRE or was this a new start?  
 24 A. No, it formalised what was common practice, yes.  
 25 Q. I see.

60



1 Looking at the document, if we scroll a little bit  
 2 further down, we can see, under "Task":  
 3 "TO. Cameras & CCTV setup."  
 4 And then we can see who is responsible for what, and  
 5 we can see that "Safety Actions prior to countdown" are  
 6 all the safety officer, and then "At logger start" it  
 7 becomes the test officer and the officer in charge, and  
 8 the logger system starts, countdown clock starts, all  
 9 cameras, et cetera.  
 10 If we scroll down a little bit further, please, can  
 11 we just move through the document on the screen, we can  
 12 see that on this page, page 303 {BRE00005769/303}, the  
 13 TO and the OIC take test notes, and the TO, the test  
 14 officer, takes test photos.  
 15 Then underneath that, after the test, if you go over  
 16 to page 304 {BRE00005769/4}, which I think is the last  
 17 page of the document — there is nothing there, okay,  
 18 but there is a sheet for test observations. Would that  
 19 normally be filled in?  
 20 A. Yes, yes, one — initially we were handwriting them, and  
 21 I think towards the end I was typing them in on an iPad,  
 22 but, yeah, essentially that —  
 23 Q. Right. Who would be responsible normally for filling in  
 24 the test observations sheet? Would it be the TO or the  
 25 officer in charge, the OIC?

61

1 A. The test officer.  
 2 Q. Right.  
 3 Can I just ask you some general questions about  
 4 ISO 9001.  
 5 Was the BRE ever, during your time there, accredited  
 6 to ISO 9001?  
 7 A. I think it's always been accredited, as far as I'm  
 8 aware. It wasn't something I was involved with, but  
 9 I think they would have been. I'd be very surprised if  
 10 they weren't.  
 11 Q. Do you recall whether there were any regular internal  
 12 audits under the auspices of ISO 9001?  
 13 A. Specifically involving fire testing?  
 14 Q. Specifically in your area of activity.  
 15 A. Not for 9001, no, no. I had never been audited for  
 16 9001, no.  
 17 Q. Had you ever been audited under any other standard?  
 18 A. 17025, which is the laboratory and testing standard.  
 19 Q. I see.  
 20 A. But that would be through UKAS, the United Kingdom  
 21 Accreditation Service.  
 22 Q. What about external audits? Do you know whether the BRE  
 23 was ever the subject of external audits pursuant to  
 24 ISO 9001?  
 25 A. It wasn't my remit, so I wouldn't know. I can't answer

62

1 that question, I'm afraid.  
 2 Q. Right.  
 3 Did you ever have any dealings with any external  
 4 auditors who were sent in to audit your activities under  
 5 ISO 9001?  
 6 A. Not 9001, no, never. As with organisations, you would  
 7 sort of see emails going through that — I think they  
 8 were 14001, 9001, but it was never directly towards me,  
 9 no.  
 10 Q. Were you ever asked any questions or asked to do any  
 11 tasks to support any audit, internal or external, under  
 12 ISO 9001?  
 13 A. Not that I can recall, no, never.  
 14 Q. Were any of your systems that you established, such as  
 15 the checklist that we've seen, done pursuant to any  
 16 recommendation or requirement under ISO 9001?  
 17 A. I think I recall having a conversation with  
 18 Michael Pratt at some point about getting them formal on  
 19 to the system, but I can't remember what happened with  
 20 that.  
 21 Q. Right. Who is Michael Pratt?  
 22 A. He was the compliance manager, I think, compliance —  
 23 yeah.  
 24 Q. I want to turn now to the topic of Celotex, which is  
 25 a very big topic which will almost certainly occupy us

63

1 for the rest of the day, if not most of the rest of the  
 2 day.  
 3 I want to start with the February 2014 test for  
 4 RS5000.  
 5 A. Yes.  
 6 Q. I begin with your involvement before the test.  
 7 Can we go, please, to {BRE00003384}. This is  
 8 an email of 4 June 2013 where we see your colleague,  
 9 Tony Baker, forwarding you an email from Jon Roper at  
 10 Celotex in which he enquired about availability to carry  
 11 out a BS 8414 test in the August of that year. Do you  
 12 see that?  
 13 A. I do, yes.  
 14 Q. If you look at the second email down, you can see that  
 15 Jonathan Roper says to Tony Baker, in the first main  
 16 paragraph which starts "Tony", in the third line:  
 17 "All I can advise currently is that it will be  
 18 a part two test consisting of a standard rainscreen  
 19 cladding build up with trespa cladding fixed to  
 20 an envelope railing and helping hand system."  
 21 Now, we can see it gets sent on to you, from the top  
 22 of the page, if we can scroll up to that, on the same  
 23 day:  
 24 "Hi Phil,  
 25 "See below, Celotex are now looking for a date ..."

64

1 Was this your first involvement with Celotex in the  
 2 context of BS 8414 testing?  
 3 A. As far as I'm aware, yes, yes. I wasn't involved in  
 4 anything else before this, as far as I was aware.  
 5 Q. Can we go to {BRE00003453}, please, and let's look at  
 6 the email halfway down that page, on page 1, sent at  
 7 8.38 in the morning by Stephen Howard to Kelvin Annable  
 8 and to you on 8 November 2013, so some months later.  
 9 You can see that Stephen Howard says:  
 10 "Another cladding system.  
 11 "We have Kingspan Insulation in week commencing the  
 12 18th Nov to do the build — (polite nudge) still need to  
 13 get a date for the day of the test.  
 14 "Celotex — see below — they are after a test slot  
 15 again a frame system — but kingspan insulation need to  
 16 be out of the burnhall before they come in  
 17 (confidentially) — Can you let me have a start date  
 18 please?"  
 19 Your reply we can see at the top of that page to him  
 20 on 11 November. You say:  
 21 "I have left a message with Mr Roper about the  
 22 timescales and given Kingspans time scales it looks like  
 23 that they will not be able to come in until early Dec.  
 24 I will let you know a date ..."  
 25 When you say you left Mr Roper a message, was that

65

1 a voicemail?  
 2 A. I would probably think it was, yes.  
 3 Q. We've seen no email correspondence about that in  
 4 particular, so we've assumed it's a voicemail; can you  
 5 confirm?  
 6 A. I can't recall. I would say probably yes, as there's no  
 7 email to — with it.  
 8 Q. Did you often communicate with Mr Roper by telephone?  
 9 A. I think what I tried to do was, if it was the first time  
 10 we'd spoken to the client, or it was the first time the  
 11 client had been introduced to me, I would make it my  
 12 task to talk to them directly on the phone as opposed to  
 13 through email, just to sort of introduce myself, let  
 14 them know what we're expecting, et cetera, et cetera,  
 15 because I was primarily the main contact. It's  
 16 different when you speak to somebody on the phone as it  
 17 is if you just send them a random email, for two  
 18 reasons: (a) people might not necessarily read the  
 19 email, but it's a bit more polite to have  
 20 a face-to-face — a telephone conversation.  
 21 Q. Can we go to {BRE00005401}, please. This is an email  
 22 from Jonathan Roper to you, if we look at the bottom of  
 23 the screen, 10 December 2013. He says:  
 24 "Phil,  
 25 "As discussed, find attached drawings for review.

66

1 "I will get hold of our installers and request the  
 2 information from then.  
 3 "If you could come back with some likely start  
 4 on site dates, I'd be obliged."  
 5 You can see that.  
 6 Do you remember what had been discussed?  
 7 A. Was it — was this after the previous email, date-wise?  
 8 Q. Well, he says, "Phil, as discussed, find attached  
 9 drawings for review". Do you remember a discussion with  
 10 him about the drawings?  
 11 A. Not about the drawings specifically. I think probably  
 12 along the lines of what I said earlier, it would be  
 13 a preliminary discussion to say, "Look, the hall is  
 14 here, this is what we expect from you when you come to  
 15 site", and I think later on there's probably an email  
 16 where I ask for certain things in terms of what they  
 17 need to provide before they come to site. So it would  
 18 probably be along the lines of the same as that email.  
 19 Q. I see. So you had asked him for drawings and he was  
 20 saying, "Here they are", essentially; is that right?  
 21 A. Yeah, what we tended to try and do was — one of the  
 22 issues we'd had in the past is that people would have  
 23 designed their system and then it wouldn't necessarily  
 24 fit on the test rig. So what we would try to do is make  
 25 sure that we had at least some drawings, even if they

67

1 were preliminary, to say sort of, "Look, these are the  
 2 bits you need to understand, this isn't going to fit on  
 3 for this reason" or "You've not met that criteria", and  
 4 that's primarily why he would have sent them.  
 5 Q. Can we go to {BRE00005410}, please. This is an email to  
 6 you from Jonathan Roper on 8 January 2014, and he asks  
 7 you to confirm the dimensions required to meet the  
 8 standard. We can see your response at {BRE00003501},  
 9 please, on 10 January 2014. You say:  
 10 "Jonathan, I have marked up your drawing and I hope  
 11 the information helps. You are correct about the widths  
 12 and the height in that they need to be increased. If  
 13 you need any other info or clarification I am happy to  
 14 help."  
 15 Was this sort of request common, that you would be  
 16 asked to mark up a test sponsor's drawings?  
 17 A. Like I said earlier, one of the things is that you get  
 18 a designer who designs a rig, a system, there are  
 19 certain things in the way it's fitted onto the wall that  
 20 you have to take into account. For example, in the  
 21 standard it says you have to have 6 metres clear height  
 22 of the hearth. I have had systems where they've only  
 23 done about 5 metres, so we would have to go back to them  
 24 and say, "Look, if you don't build it to the right  
 25 height, you are not going to be in compliance with the

68

1 test standard".

2 So it was really just to say that you have covered

3 all the bits that mean that, once you have built the

4 system, (a) it will go on the rig, and (b) it will also

5 meet the criteria of the test standard. So it wasn't

6 unusual.

7 Q. I see. So two purposes, then, in your assisting: one to

8 make sure that it had been built so it would go on the

9 rig, but the other was so that it would — you said

10 something else and it's not gone onto the [draft]

11 transcript. It would comply with the criteria, I think

12 is what you said.

13 A. Of the test standard, yes.

14 Just for clarification, we weren't there saying,

15 "Don't use this material, don't do that, I wouldn't make

16 that gap that big, you need to move your

17 cavity barriers", that's not what we were doing. It was

18 primarily to show that all of the bits that you need to

19 have a test sample that complies with the requirements

20 of the test standard is met.

21 Q. I follow.

22 Can we look at the mark—up that you sent to

23 Jonathan Roper on that day. It's at {SEF00000052}.

24 These have not been disclosed by the BRE but by Simco.

25 First, are these the mark—ups that you sent back to

69

1 Jonathan Roper on that date?

2 A. Yes, I recognise those, and that is my writing.

3 Q. It is your writing, that was my next question.

4 If you look at the writing at the very top, "Panel

5 [something] on centre line", can you just decipher that?

6 A. "Panel joint", that says.

7 Q. What were you seeking to identify from those words in

8 that place?

9 A. On the — in the test standard there is a requirement

10 for a joint on the centre line of the main wall, and it

11 was to say that when you build the system, you have to

12 have that in place.

13 Q. Then the words on the right—hand side of the drawing:

14 "Barrier may impact with 5m temperature

15 measurements. Move up?"

16 What were you seeking to impart there?

17 A. We had had in the past an issue where, because the test

18 standard is quite strict in where you put the

19 thermocouples, if they've put it at exactly 5 metres, it

20 means that we will be drilling holes through the

21 cavity barrier, and obviously that's not something you'd

22 want to do. So it was a suggestion, move up or move

23 down, so we didn't drill lots of holes in it,

24 essentially.

25 Q. Is this an example of what you told us before, namely

70

1 advising, essentially, that the test sample complied

2 with the requirements of the test standard?

3 A. Yes. Yes.

4 Q. So can we take it from this that, to that extent at

5 least, you were advising Celotex on how to build the rig

6 so that the criteria of BR 135 would be met?

7 A. Not of BR 135, no.

8 Q. What of?

9 A. A different standard — of BS 8414.

10 Q. Right, okay.

11 A. Within that standard there are certain things — so if

12 you scroll down, for example, if you don't mind, I've

13 drawn — in their initial drawing, where the hearth is,

14 they've drawn it without the return — you see where the

15 2-metre mark is, 2,000 millimetres, and then the bit

16 below it says "Return to be 260mm +0 –100"? That is

17 a requirement in the BS 8414 standard for that, whereas

18 they'd left that out in their drawing, and had they

19 built it in that, then it would be non-compliant with

20 the requirements of 8414.

21 Q. What requirement in BS 8414 were you seeking to advise

22 them to meet by the words, "Barrier may impact with 5m

23 temperature measurements. Move up?"

24 A. No, it was to say to them that we have to instrument at

25 that point. If you put your barrier there, we are

71

1 going — likely to drill lots of holes in it, which

2 potentially would make the barrier ineffective, and we

3 don't want to obviously damage stuff that is critical to

4 the test. No more than that.

5 Q. Did you get the impression at this time, January 2014,

6 that Celotex were relying on the BRE for technical

7 knowledge about how to approach a BS 8414 test?

8 A. Yes, but not just — they weren't unique at all, no.

9 Q. No.

10 A. It's quite a ... if you've not looked into it, it's

11 quite an interesting test, and not everybody — the

12 designers, using their CAD, they can design stuff to

13 a building and they'll do it very well, but this has got

14 specific characteristics that it has to have as part of

15 the test, and that's all we were saying, is that you

16 have to meet this.

17 Q. So to that extent at least Celotex, you say, were

18 relying on the BRE for technical advice?

19 A. Yes, yes, but they wouldn't — were not unique.

20 What you need to understand is, if I'd have not said

21 that and they came and built it, then they'd be going,

22 "Well, why didn't you tell us that?" So it's incumbent

23 on us to say that you have to have this in here, and we

24 do this at the early stage before they've built it and

25 finished so we're not having to undo what they've done.

72

1 Q. Let's turn to the February 2014 test itself. That was  
 2 carried out on 14 February 2014.  
 3 If we can go, please, to page 36 of your witness  
 4 statement {BRE00005768/36}, we can see paragraph 148  
 5 there, and see what you say. You deal with the  
 6 exchanges in early January with Mr Roper, that's in  
 7 paragraph 149, but in 148, in answer to the question:  
 8 "What components made up the tested system in this  
 9 occasion?", it is said:  
 10 "To the best of my recollection, the system  
 11 consisted of the following (working from the rear of the  
 12 system): two layers of Fireline plasterboard fixed to  
 13 a Simco lightweight steel supporting frame; a magnesium  
 14 oxide sheathing system attached to the front of the  
 15 lightweight steel frame; Celotex installation board ..."  
 16 I think that should be insulation board.  
 17 A. That's a typographical error.  
 18 Q. "... vertical closed mineral fibre type fire barriers;  
 19 horizontal intumescent (openstate) and mineral fibre  
 20 fire barriers (manufactured by Lamatherm); and a Marley  
 21 Eternit Natura decorative facade fixed to aluminium  
 22 carrier rails, which were mechanically fixed to the  
 23 sheathing board."  
 24 Now, you provide that list, and you say that that is  
 25 "To the best of my recollection" at the beginning of the

73

1 paragraph.  
 2 Are you suggesting that you made this list entirely  
 3 from memory?  
 4 A. Erm ... I can't recall, to be honest. I doubt it,  
 5 seeing as I've said "manufactured by Lamatherm".  
 6 Q. Why is that? Is that because you would never remember  
 7 the particular manufacturer?  
 8 A. Yeah. No, exactly.  
 9 Q. That was my question: did you look at any BRE records to  
 10 recall this information?  
 11 A. Only what I was sent by the Inquiry.  
 12 Q. Well, was what you were sent by the Inquiry sufficient  
 13 for you to be able to compile this list?  
 14 A. I recall there were some — I think I said it in the  
 15 next paragraph down, 149, I think that CB 113 01 (sic)  
 16 was possibly something I had to hand. That was  
 17 a drawing, a through-section drawing, I think, maybe.  
 18 Q. I think we may have lost you just a little bit, the  
 19 sound quality, just then.  
 20 A. Do you want me to repeat what I said?  
 21 Q. Yes, could you, please.  
 22 A. Yeah. So I think the initial drawing that may have been  
 23 sent may have had some of that information on, and some  
 24 of the drawings that I had may have had some of that  
 25 information on. So possibly I used that to clarify the

74

1 points.  
 2 Q. We don't see in paragraph 148 any reference to any  
 3 document, and that's why I'm asking you these questions,  
 4 where you got this information from.  
 5 Did you refresh your memory from documents when you  
 6 made this statement, or is this a list that you recall  
 7 at the time?  
 8 A. Erm —  
 9 Q. At the time you did your statement.  
 10 A. I think initially what I did was I dictated it as  
 11 I remembered it, and then maybe I may have just checked  
 12 through from a drawing. But to be honest, I can't  
 13 recall.  
 14 Q. I see.  
 15 Can you explain why you didn't provide copies of the  
 16 documents from which you got this information when you  
 17 provided your statement?  
 18 A. I believe they are. I'd be very surprised if they're  
 19 not in there. So everything that you had was what was  
 20 issued to me by the Inquiry, so ...  
 21 Q. I see.  
 22 A. Yeah. Unfortunately I'm — as I say, at the time I was  
 23 no longer a BRE employee, so I was reliant on what was  
 24 being sent to me.  
 25 Q. When you did this statement, were you satisfied that the

75

1 documents you were sent had come from a proper set of  
 2 records for this test?  
 3 A. As far as I could see, yes, yeah.  
 4 Q. There was nothing that alerted you to the fact that  
 5 these documents were incomplete or that the SOP, the  
 6 statement of practice we saw earlier, was somehow  
 7 incomplete in respect of this test?  
 8 A. No, I don't think so, no. I think there's some  
 9 documents which were scanned in by BRE of the test file,  
 10 and you can actually see where the punch-holes are —  
 11 have been picked up by the scanning process, and my  
 12 understanding was that they were the paper that had been  
 13 taken out of the test file and scanned in.  
 14 Q. I see.  
 15 Now, you said earlier on in an answer that you had  
 16 prepared this statement, or this part of it at least,  
 17 from documents sent to you by the Inquiry. That's not  
 18 right, is it? In fact, the documents were provided to  
 19 you by the BRE or their solicitors, weren't they?  
 20 A. Erm, I ... if that's what you say. I can't recall.  
 21 I understood they came from the Inquiry. I was issued  
 22 a packet of stuff, maybe. I'm not certain who they came  
 23 from.  
 24 Q. Where did you get that understanding from?  
 25 A. Sorry, I missed your — could you repeat that question?

76

1 Q. Where did you get your understanding that the documents  
2 you used to compile this paragraph had come from  
3 the Inquiry?  
4 A. That was just my understanding. It didn't say who they  
5 necessarily came from. I thought they'd been disclosed  
6 from the Inquiry.  
7 Q. For the record, they didn't, they came from the BRE.  
8 A. Right, okay, I stand corrected.  
9 Q. Let's move on then to the testing.  
10 Can we go to {BRE00005425}, please. This is  
11 an email appointment:  
12 "Subject: Celotex Cladding test.  
13 "Location: Burn Hall.  
14 "Start: 14/02/2014 11:00."  
15 Ending 3 o'clock the same day.  
16 If you look down the document, you can see that  
17 there are some required attendees and optional  
18 attendees. Do you see that?  
19 There is a message:  
20 "Guys I would like to undertake the cladding test on  
21 wall 4 for Celotex with your assistance.  
22 "There is a very real possibility that the system  
23 may fail so full PPE will be needed.  
24 "Roles as usual:  
25 "Me as safety officer.

77

1 "Tom as officer in charge and fire fighting back up.  
2 "Leah as client liaison /supervision.  
3 "Simon fire fighting.  
4 "Steve, Steve and Paul this is for information only  
5 and to agree the availability of Simon.  
6 "Thanks  
7 "Phil."  
8 So I'm showing you that.  
9 A. Yes.  
10 Q. I'm showing you that you said there was "a very real  
11 possibility that the system will fail so full PPE will  
12 be needed".  
13 What led you to think that that test might well  
14 fail?  
15 A. It was the first test they'd ever done, so what we  
16 tended to do is if there was no history of how a system  
17 would perform, we would err on the side of caution. So  
18 that was to basically say, "Look, I'm not certain what  
19 it's going to do, there is a likelihood that it may fail  
20 because it's a development product and has never been  
21 put through this system", just to make sure that people  
22 had their PPE with them, because you don't want to be  
23 doing this when it's failing, you want to make sure  
24 everybody's got everything with them before.  
25 Q. I see. So the fact that this was a first —time test was

78

1 the reason for your pessimism, I think?  
2 A. Yes, yeah. Having done it for such a period of time,  
3 you cannot always guarantee, but you should err on the  
4 side of caution as a first test. They may be at  
5 a development stage where it wouldn't perform as well as  
6 they'd expected. So it's just an err of caution,  
7 really, yes.  
8 Q. Was it your experience at that time, early 2014 — you'd  
9 been there almost ten years doing this — that sponsors  
10 would keep testing until they found a system or  
11 modification of a system that would pass?  
12 A. Yes, they could do, yes, yeah. There have been  
13 instances where that had been the case, yes.  
14 Q. Now, this email sets out the roles, and it suggests that  
15 you were going to be the safety officer and Tom Lennon  
16 as the officer in charge, but in your statement you say  
17 that this particular test was conducted under your own  
18 oversight. That's paragraph 152 at page 37  
19 {BRE00005768/37}.  
20 A. Yes.  
21 Q. Is that right? Was it under your oversight, or were you  
22 going to be the safety officer, or was that —  
23 A. Yes, no, those roles were sort of fairly fluid.  
24 I tended to take the officer in charge role because  
25 I was predominantly the person who took the notes.

79

1 I think on the day we decided to swap the roles over.  
2 Q. So that you became officer in charge?  
3 A. Yes.  
4 Q. And who became safety officer, Tom —  
5 A. Tom Lennon, yes.  
6 Q. If we go to paragraph 147 of your statement, please, at  
7 page 35 {BRE00005768/35}, you see that you say at the  
8 start of that paragraph, in answer to the question, "At  
9 what stage was the test terminated? Why was it  
10 terminated?":  
11 "I believe the test was terminated due to excessive  
12 flaming on the outer decorative facade of the system  
13 which spread rapidly over the surface and burned over  
14 the top of the system."  
15 Then you go to say a little bit lower down the  
16 paragraph:  
17 "The reason the test was terminated in this case  
18 would have been on the grounds of safety; due to the  
19 rapid nature of the fire growth and no clear sign that  
20 the fire was reducing in size, the decision was taken to  
21 terminate the test."  
22 Is it right that the decision to terminate the test  
23 was taken on the grounds of safety and not, or not  
24 simply, because overtopping the rig would have prevented  
25 classification to BR 135?

80

1 A. Yes. You get to a stage where you know if it's going to  
 2 get any better or not, and the decision was it wasn't  
 3 going to get any better, so there was — it was better  
 4 to stop it there.  
 5 Q. As the officer in charge, was that your decision?  
 6 A. It was, because from a testing point of view I'd seen  
 7 everything I needed to see to ... so there was no more  
 8 to be gained in terms of the test. It wasn't that  
 9 Tom Lennon said, "Right, you have to shut it down  
 10 because it's dangerous". So I took the decision that  
 11 there was no need to carry on.  
 12 Q. What had you seen that you needed to which meant that  
 13 there was no more to be gained?  
 14 A. That the external Natura Eternit boards had pulled away  
 15 from the cavity barrier. The cavity barrier was no  
 16 longer effective. Most of the second and the upper  
 17 layers of board had fallen away and it had exposed the  
 18 core of the — the main surface face of the insulation,  
 19 and it was clear that the fire was becoming out of  
 20 control.  
 21 Q. I'm afraid we lost you just a little bit, your sound  
 22 dropped away very briefly. You said something before  
 23 you said, "The cavity barrier was no longer effective".  
 24 What was that?  
 25 A. That the board had pulled away and distorted and that

81

1 the cavity barrier was no longer effective.  
 2 Q. Thank you.  
 3 Now, can I then ask you about conversations after  
 4 the test had been completed or had been terminated.  
 5 Can we go to page 41 of this witness statement  
 6 {BRE00005768/41}, please. You can see that at that  
 7 page, question 8(a) asks this:  
 8 "In relation to any test to BS 8414 on a system  
 9 incorporating RS 5000 on 14 February 2014, was the BRE  
 10 asked by the test sponsor for advice as to any aspect of  
 11 the BS 8414 testing process? If so, was any guidance or  
 12 advice provided? What was the nature of any such  
 13 advice? By and to whom was it provided?"  
 14 Sorry, it's a long question.  
 15 Your answer starts at paragraph 172, and you say:  
 16 "I have set out full details of all exchanges  
 17 between BRE and Celotex prior to the test on  
 18 14 February 2014, to the best of my knowledge and  
 19 recollection, above."  
 20 If you go down a little bit further into  
 21 paragraph 173, you say:  
 22 "For my own part, no guidance would have been given  
 23 as to how or in which way a BS 8414 test could be  
 24 passed."  
 25 Now, you say no guidance would have been given; is

82

1 that a statement of your general practice, or is it  
 2 a statement specifically in relation to the 14 February  
 3 Celotex test?  
 4 A. General practice.  
 5 Q. Now, we're going to look at the videos. Can we go to  
 6 the video footage from the head camera that you were  
 7 wearing.  
 8 I should just ask you: can you confirm you were  
 9 wearing a head camera during this test, weren't you?  
 10 A. I confirm that, yes.  
 11 Q. I perhaps ought to give a trigger warning at this point,  
 12 because we will see in the background some live fire on  
 13 a test rig as part of this video. So if that image is  
 14 going to be upsetting to anybody watching this, then  
 15 that is something they will see, so they should stop  
 16 watching.  
 17 {BRE00005659}, please, and I will ask the operator  
 18 to play the video from 01.20 to 01.38, and what I want  
 19 to ask you about starts at 01.24. We can play it again  
 20 a second time if we need to, Mr Clark.  
 21 (Video played)  
 22 Now, we believe this conversation was between  
 23 Jamie Hayes of Celotex and you, and much of it is  
 24 of course indistinct.  
 25 Let's have the transcript of that conversation,

83

1 please, at {INQ00014137/2}. I know it's an instinct  
 2 audio, Mr Clark, we can play it again if need be.  
 3 (Pause)  
 4 That's it. Now, that is not a brilliantly legible  
 5 version of this document.  
 6 A. I'm struggling to read it, so yes, yes.  
 7 Q. I know. I wonder if we have a better one. We may do.  
 8 There, that's clear now.  
 9 A. Yes.  
 10 Q. Let's go halfway down page 2 {INQ00014137/2}, please.  
 11 This is the transcript of the audio of that  
 12 conversation.  
 13 Can I just ask you to confirm that you have seen  
 14 this before and have seen the audio and had  
 15 an opportunity to check one against the other?  
 16 A. I have, yes, as far as I'm aware, yes.  
 17 Q. Now, we can see halfway down page 2 where there is the  
 18 first mention of "MALE SPEAKER 4". Can you see that?  
 19 Where it says —  
 20 A. (inaudible) looking.  
 21 Q. — "If you were to look at the cause of the failure".  
 22 Do you see that?  
 23 A. Yes, I do.  
 24 Q. That is Mr Hayes, and he asks you for your view about  
 25 the cause of the failure of the system. He says:

84

1 "If you were to look at the cause of the failure  
2 with a view to the parts of the system, is it the  
3 cladding panel the combustibility of the insulation or  
4 a combination of both those things?"  
5 And we see a reply:  
6 "MALE SPEAKER 1: Um, the problem you have with a lot  
7 of these systems is just making sure that you've got  
8 some substrate for the barrier to push against. And as  
9 soon as you lose that then you've got an exposed core,  
10 potentially, erm, and obviously, that's got its own  
11 inherent surface spread of flame and if that's more than  
12 the barrier can cope with then ..."  
13 Then you're interrupted.  
14 Is that your reply to Mr —  
15 A. That sounds — yes, that sounds coherent for what  
16 I would say, yes, I would say.  
17 Q. Can we then go back to the video, {BRE00005659}, and  
18 play from 02.58 to the end, and the quote or the section  
19 I want to ask you about starts at 03.02.  
20 Play from 02.58 to the end but listen particularly  
21 from 03.02.  
22 (Video played)  
23 Now, I think you would have caught some of that at  
24 least.  
25 A. I think I understand what's said.

85

1 Q. Yes.  
2 Now, can we go to the transcript, then, at  
3 {INQ00014137/3}. On page 3, let's look at the final  
4 passage from male speaker 1, which is you — and tell me  
5 if it isn't, we believe it is — you say:  
6 "I don't think the panel itself actually contributed  
7 much from what I've seen. I think it's just the fact  
8 that it — it distorted and broke away and you've  
9 basically lost your — what you've got to push against  
10 the barrier. Um, but there isn't a — if it's  
11 cement-based you're obviously burning away all of the  
12 polymers and all the stuff that binds it together and  
13 (inaudible) or it falls down.  
14 "It's fallen, it's collapsed now, right the way up,  
15 so there is — there is nothing in place to stop the  
16 barrier, to give the barrier anything to push against."  
17 Now, did you think at the time that these comments  
18 on the relative contribution of different parts of the  
19 system to the overall failure were the sorts of things  
20 that BRE should be advising a client?  
21 A. I don't know if you could see, but in the video there's  
22 a structure which they're all standing next to, which is  
23 to — as I was watching it, it was to the left, which  
24 meant that the clients from Celotex didn't have a direct  
25 view of the test rig. So what I was trying to put

86

1 across was what I could see from where I was, and that  
2 was my — what I saw was that the board pulled away and  
3 gave such a large gap that the intumescent barrier would  
4 never have fired off.  
5 So, yeah, I don't see anything wrong with saying  
6 that. It was fact-based and it was imparting the  
7 information that I had seen first-hand.  
8 Q. Yes. I know it's a difficult line to draw sometimes,  
9 and I appreciate that, but was there not an obvious risk  
10 to you at the time that this would be taken by Celotex  
11 as advice about the need for there to be something for  
12 the barrier to push against?  
13 A. No, I wouldn't have said so.  
14 Q. If you're educating your client about precisely what has  
15 happened during the test as it happens, is that not  
16 going to be taken as at least the basis for advice about  
17 how to improve the system the next time?  
18 A. No, because we were talking about what happened there  
19 and then, and ... as I say, they couldn't see directly  
20 where it was, and from the angle that I was, you could  
21 see that the barrier had distorted to such an extent  
22 that it had essentially made the — sorry, the board had  
23 distorted — that it made the barrier redundant,  
24 essentially.  
25 So, no, I don't think there was anything wrong with

87

1 that. It's not giving advice as to how to construct the  
2 system.  
3 Q. Did you turn the head camera off at that point?  
4 A. I did, yes.  
5 Q. Did the conversation continue afterwards?  
6 A. I don't recall necessarily. The reason it was turned  
7 off is because we used to just get hours of drivel if  
8 I forgot to turn it off, so I got to a stage where  
9 I thought, right, let's turn it off, because it's just  
10 wasted video filling up the network drive.  
11 Q. Do you recall whether the conversation continued after  
12 you turned the head cam off?  
13 A. I don't recall, no.  
14 Q. There is one more thing to pick up from this video.  
15 If we could play the video again, and this time from  
16 02.35 to 02.46, and the quote or the part of it I want  
17 to ask you about is at 02.39. If we could just play  
18 that, then I'll show you the transcript.  
19 (Video played)  
20 Now, let's go to the transcript. That was pretty  
21 audible, I think —  
22 A. Yes.  
23 Q. — but let's go to the transcript anyway,  
24 {INQ00014137/2}. On page 2, in the very last part of  
25 the penultimate passage, male speaker 1, which starts

88

1 "Yeah. That might break off unless it's welded" —  
 2 well, let's just look at the whole thing. You say:  
 3 "Yeah. That might break off unless it's welded.  
 4 You've got the obviously, inherent surface spread of  
 5 flame on the — on the material erm so it stays in place  
 6 so if you've got a hundred mill you've got to burn  
 7 through all of that before it just disappears. So  
 8 sometimes you're in a situation where if it — if all  
 9 the material goes away and you take it away from the  
 10 heat source then that's brilliant, but if it stays in  
 11 place then its burning burning burning and it's just  
 12 pushing out the system really. Erm ... (inaudible) I've  
 13 seen worse."  
 14 Just looking at all of that, that's advice, isn't  
 15 it?  
 16 A. Advice to do what?  
 17 Q. It's the benefit of your experience that you're  
 18 imparting to the client, isn't it?  
 19 A. No, it's a fact that I'm imparting in the way it's ...  
 20 the way that these materials behaved. So it's not  
 21 advice. So if I was saying that — if you're advising  
 22 me to do something, then that would be some action that  
 23 you would take. So, "I advise you to go and get me  
 24 a glass of water" — but that's not what this is. This  
 25 is not advice; it's passing on information as to what

89

1 was seen and how things behave.  
 2 Q. With respect, it's not, is it? You're giving Celotex  
 3 the benefit of your general knowledge and experience and  
 4 expertise. You're telling Celotex what always happens  
 5 in every situation, aren't you? That's the gist of what  
 6 you're saying here.  
 7 A. I would say probably not, no.  
 8 Q. Well, you say:  
 9 "So sometimes you're in a situation where ..."  
 10 And you go on to explain. Well, that "sometimes" is  
 11 the benefit of your advice; it's not what happened on  
 12 this occasion. You're not —  
 13 A. Erm —  
 14 Q. — facts; you're giving advice.  
 15 A. No, that is — I think that's what's happened on this  
 16 occasion, yes. What I was saying was that the material  
 17 had burned on the surface, and if you get to a situation  
 18 where it's burned all the way through, then you've got  
 19 nothing more to burn. I don't see how this is — what  
 20 I'm advising them — it's — yeah, I don't see it as  
 21 advice, no.  
 22 Q. When you say, "I've seen worse", that is again the  
 23 benefit of your professional experience. It's not  
 24 a report of what happened, it's your judgement.  
 25 A. It is, but then I don't go to clarify by saying, "I've

90

1 seen worse and this did this, this did that". So it's  
 2 a general statement post-test, talking to a client who  
 3 it's the first time they'd ever seen a full — scale test,  
 4 and they're always in a position where they want to  
 5 understand how they performed to a certain extent. So  
 6 no more than that.  
 7 Q. The same again on page 3 {INQ00014137/3}, the first  
 8 comment at the end of the sentence, if we look at that,  
 9 page 3, you say:  
 10 "For a first attempt it's not bad actually. If  
 11 you've never done it before."  
 12 Again, same point: it's you imparting to a client  
 13 who wants to get their bearings the benefit of your  
 14 professional expertise and experience; no?  
 15 A. Yes, I would say there's always that, but it's one of  
 16 these things that you can say something to that regard,  
 17 they're always going to want to know how their system  
 18 has performed. To say "Not bad for a first attempt"  
 19 isn't advising them in any way, shape or form, I don't  
 20 think.  
 21 Q. Well, it's giving, as I say — we can characterise it  
 22 a number of ways. It's not specific advice about what  
 23 to do next time, but it's a comfort which would  
 24 encourage them that the degree of failure, in your  
 25 experience, wasn't so bad. Do you accept that at least?

91

1 A. Yes, I accept that, yeah, yes, and that's why I said it,  
 2 it's — what you need to understand is, if you're in  
 3 a position where you're developing a product, you need  
 4 to have some benchmark to a certain extent, and if I'd  
 5 have turned round and said, "Well, I can't tell you  
 6 anything", well, nobody ever learns anything, and  
 7 ultimately we're there to drive safety, and if my advice  
 8 drives safety then I'm happy to give it, but I don't  
 9 think that is advice, that was ... yeah.  
 10 Q. I'm just seeking to explore really to what extent it's  
 11 true to say that you gave no guidance and would have  
 12 given no guidance. I'm just suggesting to you that,  
 13 although this isn't guidance about how to pass, it's  
 14 nonetheless guidance in a broad sense.  
 15 A. Erm ... it's ... yeah, it's like anything, isn't it?  
 16 It's open to interpretation. I wouldn't class it as  
 17 guidance. It's imparting a degree of information to the  
 18 client which doesn't give away other people's IP,  
 19 doesn't tell them what to do, but gives them — they  
 20 need to understand how their system is performing, and  
 21 if they've got no benchmark, the only benchmark they  
 22 have is what comes from me. So, yeah, I hope that makes  
 23 sense.  
 24 Q. In your statement you have covered at paragraphs 192 to  
 25 194 {BRE00005768/46} the comment about the rainscreen

92



1 having collapsed. I think when you prepared your  
 2 statement, you had reviewed the video for this test;  
 3 yes?  
 4 A. I think so, yes.  
 5 Q. As I say, you had referred to the comment about the  
 6 rainscreen having collapsed so that there was nothing  
 7 for the cavity barrier to push against, but you didn't  
 8 mention the other comments about whether the cladding  
 9 had contributed or whether this was frequently  
 10 a problem. My question is: why is that?  
 11 A. I thought I had. It was — it wasn't a deliberate  
 12 omission, if that's what you're trying to say, but it  
 13 is — I thought I had covered the whole of that  
 14 transcript. To be honest, I've looked at so many videos  
 15 and written so many transcripts, it may have got missed  
 16 out.  
 17 Q. Let's go to paragraph 201 of your statement on page 49  
 18 {BRE00005768/49}, please. The question you're answering  
 19 is question 8(q):  
 20 "On what basis did Celotex decide to arrange  
 21 a further test to take place on 2 May 2014? What  
 22 discussions took place between you and any Celotex  
 23 employee in respect of further testing?"  
 24 That's the question you're addressing.  
 25 At paragraph 201 you say:

93

1 "I am unaware of the reasoning for Celotex  
 2 commissioning a second test, which was subsequently  
 3 undertaken on 2 May 2014."  
 4 Then you say:  
 5 "I do not know what advice may have been given by  
 6 others as to how the test system might perform  
 7 (including if the outer decorative boarding was  
 8 changed). I do recall providing Mr Roper with  
 9 a photograph of the Celotex installation on the wing  
 10 wall which was behind the rainscreen board ..."  
 11 And you exhibit some photographs.  
 12 Then you go on to say, after the reference to the  
 13 nine photographs showing the minimal damage:  
 14 "It therefore may have been on the presumption that  
 15 the fire was not driven by the Celotex insulation  
 16 component but rather by the rainscreen board opening up  
 17 at the fire barriers and falling away, that Celotex  
 18 decided to undertake a re-test. This, however, is  
 19 speculation on my part."  
 20 Now, in fact, as we've seen from the transcript, you  
 21 had told Celotex that the cause of the failure was the  
 22 rainscreen boards opening up, deforming as you now said,  
 23 and falling away. So although you say it was  
 24 speculation, it had a scientific basis nonetheless,  
 25 didn't it?

94

1 A. Yes, I agree, yes.  
 2 Q. At the same page, paragraph 202, if we just go down  
 3 there, please, at the bottom of the page, you say:  
 4 "I am not aware of Celotex being made aware of any  
 5 specific and/or technical performance issues relating to  
 6 the test carried on 14 February 2014, other than to  
 7 confirm the primary spread of fire on the tested system  
 8 as I have explained above."  
 9 Now that you have seen the transcripts and the video  
 10 camera recording, with you commenting and advising on  
 11 the test, do you accept that that is not a wholly  
 12 accurate summation of the facts?  
 13 A. Erm ...  
 14 (Pause)  
 15 If you read it that way, potentially, yes. But  
 16 maybe I've misinterpreted what was meant by specific or  
 17 technical issues relating to the performance, so maybe  
 18 that's my misinterpretation. But I ...  
 19 Q. Yes.  
 20 A. I don't quite understand the question. Maybe —  
 21 Q. My having shown you the transcript — and there are  
 22 other parts of the transcript we can look at at some  
 23 length, no doubt — I'm inviting you to accept that when  
 24 you say, "I am not aware of Celotex being made aware of  
 25 any specific and/or technical performance issues

95

1 relating to the test ... other than to confirm the  
 2 primary spread of fire on the tested system", that is  
 3 an inaccurate and incomplete summary because you were  
 4 telling them a good deal else.  
 5 A. Yes, you may be right, yes, I'll concede that one.  
 6 Q. Yes, thank you.  
 7 At paragraph 203 {BRE00005768/50} you say, in answer  
 8 to question Q8(s):  
 9 "Was any advice or guidance sought by Celotex from  
 10 the BRE in respect of the performance of the system  
 11 tested? If so, by and from whom? What was the nature  
 12 of the advice?"  
 13 You say:  
 14 "I am not aware that any advice was sought from BRE  
 15 in relation to the performance of the system tested on  
 16 14 February 2014. As I have explained above, any advice  
 17 from BRE could be deemed to constitute 'consultancy' and  
 18 would therefore fall outside the remit of its UKAS  
 19 accreditation. It is therefore highly unlikely that any  
 20 such advice would have [been] given and, had any been  
 21 sought or requested, I expect that the request would  
 22 have been rejected."  
 23 Now, again, my having shown you even just parts of  
 24 the transcripts, do you accept that that is  
 25 an inaccurate and incomplete summary, given what we've

96

1 seen and heard of the conversations?

2 A. Erm ... so I took that as post-test, did they phone up

3 and ask advice post the test, so that's why that was

4 drafted in that way, I think. So maybe I — because

5 I didn't necessarily recall what was said on the day,

6 and because I didn't — I don't class that necessarily

7 as advice, that's probably why I answered that in that

8 way. So I'd assumed it meant: did they phone up and

9 say, post the test, "What do you advise we do?"

10 Q. I see. So you understood the question as limited in

11 time to the time after the test?

12 A. Indeed, yes, yes.

13 Q. But do you accept that, given what we've seen of what

14 was said during the test, the summary is not accurate

15 and complete?

16 A. If you take the discussion that we had, which I class as

17 a post-test debrief to a certain extent, if you take

18 that as — the way you're saying, as advice, then that

19 statement is correct, but that's not the way

20 I interpreted it, no.

21 Q. On that basis, would you agree that the discussions that

22 we've looked at on the transcript and in the video go

23 beyond what was permissible given the scope of your UKAS

24 accreditation?

25 A. I don't believe so, no.

97

1 Q. It was consultancy effectively, wasn't it?

2 A. No, I don't believe it to be, no.

3 Q. Giving the benefit of your experience, knowledge and

4 making general statements about the failure(?) of this

5 test in comparison with your general experience, why

6 would that not be consultancy?

7 A. Because they get nothing to their advantage from it.

8 They can't go back and say, "So—and—so told me this".

9 It's a general statement. It's a statement made after

10 a test to a client as part of a conversation, who is

11 there paying to ... yeah. Yeah, I can't answer the

12 question other than that, really.

13 Q. I'm sorry to press you, but they do get something to

14 their advantage, don't they? They get the experience of

15 a technician who has seen loads of these tests, has done

16 them for ten years, has seen every test going, and who

17 tells them not only about the primary causes of the

18 failure, but also that you've seen worse and it's not

19 too bad. Some people might pay a consultant an awful

20 lot of money to have that comfort, no?

21 A. Not from my experience. To be honest, what I said there

22 is nothing that I've not heard from any other member of

23 staff, so I don't think I was talking out of turn there,

24 and I wouldn't — I would be — I wouldn't have said it

25 had I thought it was out of turn.

98

1 And for — I'm not here to defend myself, but had

2 I thought it would be that, and I thought that there was

3 any issue with it, then I would have chose not to wear

4 a helmet camera, because the whole reason why that

5 decision was made, and the decision to wear that camera

6 was my decision, was for clarity. And if somebody

7 chooses to say what I said was consultancy and they beg

8 to differ, then I'm happy to be educated. But I don't

9 think it was. And if I had anything to hide, I wouldn't

10 be wearing a helmet camera.

11 Q. No, I'm not suggesting that this was some — well, let's

12 go, in light of that answer, to the transcript again.

13 Can we look at page 3 of the transcript, please.

14 {INQ00014137/3}. You can see from the third entry down

15 on the top of that page, male speaker 4 — that's

16 Mr Hayes — is actually saying:

17 "I'm just wondering if you had the same insulation

18 but the cladding panel itself was (inaudible)."

19 Your response to him is:

20 "I don't think the panel itself ... contributed much

21 from what I've seen ... it's just ... that it ...

22 distorted ..."

23 What you're saying here is actually an answer to

24 a question you have been asked by male speaker 4,

25 Mr Hayes. I know he puts it in terms of a musing or

99

1 a wondering, but he is saying "I'm just wondering" and

2 you're answering him. Isn't that advice?

3 A. No, it's passing on the fact of what I'd seen.

4 Q. He is asking you, "What would happen if we had the same

5 insulation but did something different with the cladding

6 panel?" And your response to him is, "I don't think the

7 panel itself actually contributed much", in other words

8 that change won't make a difference. Is that an unfair

9 way of characterising that exchange?

10 A. When I say the term "contributed much", that's

11 a distinction between the fact that the panel itself was

12 burning and carrying the flame up the façade of the

13 build-up, of the test rig. The thing with that is that

14 the panels were falling to bits in their own right,

15 really, and I don't think they could see that from where

16 they were, so I was passing on information as what I saw

17 in the test, and I don't think that was any more than

18 that.

19 Q. Who was male speaker 6, do you know? Did you work it

20 out?

21 A. Male speaker 6, was that the gentleman in the blue hat?

22 Q. Well, I don't know, you help me.

23 A. No, I don't know who male speaker 6 is.

24 Q. Male speaker 6 says, right at the bottom of page 3:

25 "(inaudible) barrier systems which ninety-nine per

100

1 cent of them are ..."

2 A. Oh, right, yeah, no, that's Jonathan Roper.

3 Q. That's Jonathan Roper, is it?

4 A. Yes.

5 Q. Now, if we go to {CEL00010052/12}, please, this is the

6 statement of Jonathan Roper to the Inquiry. He says

7 this at paragraph 5.29:

8 "Following the end of the test, Rob, Ian Cooper,

9 Phil and I had a discussion whilst at the BRE testing

10 centre. Phil said that he had 'seen worse fails' and

11 suggested that Celotex might want to strengthen the

12 outside of the test rig in order to counteract the

13 cracking of the Marley Eternit panels. I told Phil that

14 the Marley Eternit panels were also available in 12mm

15 (in addition to the 8mm panels used in the test) and

16 Phil responded that he thought that thickening the

17 panels to 12mm might suffice. Phil also joked that

18 Celotex could use a 6mm cement particle board like

19 Kingspan — but I knew that this was not what the

20 business wanted."

21 Now, taking this in stages, if we can, having

22 already seen that you did indeed say that you had seen

23 worse fails, and we've seen that in the transcript and

24 on the video, is Mr Roper correct that you also had

25 a conversation with him at the Burn Hall about

101

1 thickening the Marley Eternit panels?

2 A. It's not a conversation I recall, no.

3 Q. It's a conversation that Mr Roper recalls; can you say

4 he is wrong?

5 A. I would say I don't recall. I don't know whether he was

6 wrong, but I don't recall it. I definitely —

7 I remember this coming up, and I definitely do not

8 remember joking about the Kingspan 6—millimetre.

9 Q. I'll come to that in just a moment, just taking this in

10 small stages, if we can.

11 A. Okay.

12 Q. Just in relation to the thickening of the Marley Eternit

13 panel, you say you can't recall, but do you say that

14 Mr Roper's recollection is faulty?

15 A. Yes, I would.

16 Q. So your evidence is that that conversation didn't

17 happen; is that right? Or just that you can't recall?

18 A. I can't recall it.

19 Q. Do you understand there is a difference between saying

20 "I know this didn't happen" on the one hand, and saying

21 "I can't remember one way or the other" on the other?

22 A. Oh, I understand the difference, yeah. I could never

23 recall that conversation taking place, no.

24 Q. Right.

25 A. To a certain extent, I don't even know what thicknesses

102

1 the Marley Eternit panels come in. I don't have enough

2 knowledge of them to say that they do or don't or

3 whatever thicknesses they're available in. So if that

4 conversation was had, that would have been something

5 coming from Mr Roper, because, as I say, I wouldn't know

6 the thicknesses they were available in.

7 Q. Well, his recollection is not that you actually cited

8 any thickness of any Marley Eternit panel, only the

9 6—millimetre cement particle board of Kingspan, which

10 you were familiar with, I think, from your —

11 A. No, I wasn't familiar with that, because that was, what,

12 nine years prior?

13 Q. Right.

14 A. The only reason — he may have known that, but that was

15 nine — in 2005. I don't keep knowledge like that in my

16 head.

17 Q. The only reason I'm picking you up on this is the

18 thickness of the Marley Eternit panel information came

19 from him, not you.

20 A. As in the 6—mil and the 12—mil, you mean?

21 Q. You can see that from his recollection.

22 A. Yes, yes.

23 Q. "I told Phil that Marley Eternit panels were also

24 available in 12mm (in addition to the 8mm panels used in

25 the test) ..."

103

1 A. Right.

2 Q. So that information came from him, not you, and

3 therefore the fact that you wouldn't know it is no

4 guide, is it?

5 A. I suppose not, no.

6 Q. He goes on to say, as we've just seen:

7 "Phil also joked that Celotex could use a 6mm cement

8 particle board like Kingspan — but I knew that this was

9 not what the business wanted."

10 Again, do you recall telling him that you thought

11 that thickening the panels to 12 millimetres might

12 suffice?

13 A. Erm ... I don't recall the conversation, no.

14 Q. Do you recall joking with him that Celotex could use

15 a 6—millimetre cement particle board like Kingspan?

16 A. I definitely don't remember that, no.

17 Q. Do you recall making even the gist of the point that

18 they could "do a Kingspan" or use a cement particle

19 board?

20 A. No, because, as I said earlier, that test was undertaken

21 in 2005. I'd done numerous projects and numerous other

22 things like that, and for me to remember that it was

23 even a 6—millimetre cement particle board would — I've

24 got a good memory, but it's not that good.

25 Q. No. You would remember that it was a cement particle

104

1 board, though, wouldn't you?

2 A. Possibly, yes. Yes. But, again, it's not the sort of

3 joke I would make. I think that's too — it's — to me

4 it's been put in there to bolster an argument that

5 they're making. I think that it's put in there to

6 feather their nest, I think.

7 Q. Well, never mind about that. I'm just asking for your

8 recollection.

9 A. I don't recall it, no.

10 Q. No.

11 Given that the Marley Eternit was 8 millimetres of

12 cement fibre board, you wouldn't be advising him, would

13 you, to use a thinner version of the same material if

14 in fact the Kingspan test had been fibre board?

15 A. Sorry, could you repeat the question? Sorry.

16 Q. Yes. It isn't likely, is it, that given that the

17 Marley Eternit 8 millimetres of cement fibre board was

18 fibre board, you wouldn't be advising him to use

19 a thinner version of the same material? My point is

20 it's therefore likely that you would have told him to

21 use cement particle board like Kingspan had done.

22 A. I wouldn't advise him to make it thinner, no, seeing as

23 it's just failed on a thinner product.

24 MR MILLETT: Can we see what Mr Roper said in his oral

25 evidence at transcript {Day70/73:2}, please. If we can

105

1 go to line 2, you can see ... I think that's a wrong

2 reference, I am afraid. That's not what I want to show

3 you.

4 Perhaps I can come back to that after the break,

5 Mr Chairman. I'm looking at the time. It's probably

6 a convenient moment anyway.

7 SIR MARTIN MOORE—BICK: I was going to say, would you like

8 to take a break now? That's probably sensible and you

9 can check the reference over the adjournment. Yes?

10 MR MILLETT: Yes, Mr Chairman.

11 SIR MARTIN MOORE—BICK: Okay.

12 All right, Mr Clark, we'll have a break now so we

13 can all get some lunch. We will come back, please, at

14 2 o'clock.

15 THE WITNESS: Okay.

16 SIR MARTIN MOORE—BICK: No talking to anyone about your

17 evidence, please, over the break. All right?

18 THE WITNESS: No, I won't, thank you very much.

19 SIR MARTIN MOORE—BICK: Very good. See you at 2 o'clock,

20 then.

21 THE WITNESS: Thank you, okay.

22 SIR MARTIN MOORE—BICK: Thank you very much.

23 2 o'clock, please.

24 THE WITNESS: Thank you.

25 ( 1.00 pm)

106

1 (The short adjournment)

2 (2.00 pm)

3 SIR MARTIN MOORE—BICK: Welcome back, everyone. We're now

4 able to continue taking evidence from Mr Clark.

5 Mr Clark, are you there and can you hear me and see

6 me?

7 THE WITNESS: I can hear you and see you, sir, yes, I can.

8 SIR MARTIN MOORE—BICK: Thank you very much. And you are

9 ready to carry on?

10 THE WITNESS: I am indeed, yes.

11 MR MILLETT: Thank you very much, Mr Chairman.

12 Mr Clark, I would like to show you the transcript of

13 {Day71/73:2}, please. At line 2 on that page, you can

14 see the question and answer. The questioner is me and

15 the answer is coming from Mr Roper. This is his

16 evidence:

17 "Question: When you say he 'joked that Celotex

18 could use a 6mm cement particle board', I'm just trying

19 to understand why you thought what he was saying was

20 a joke. Was it because actually you all knew that the

21 use of the 6—millimetre cement particle board that

22 Kingspan had used was a joke?

23 "Answer: Unrealistic, yes.

24 "Question: Unrealistic. Well, I don't want to coin

25 a phrase, perhaps, but a cheat?

107

1 "Answer: Erm ... manipulation of the test details,

2 yeah. It's — I expressed those views to Phil.

3 "Question: You weren't in any doubt, were you,

4 about Phil Clark's attitude to the reliability of the

5 Kingspan test using cement particle board?

6 "Answer: No."

7 Do you agree, looking at that evidence of Mr Roper

8 to the Inquiry, that you did suggest following the

9 Kingspan example as a joke for the reasons that Mr Roper

10 says he understood it?

11 A. No.

12 Q. Was the suggestion of incorporating 6—millimetre cement

13 particle board or any cement particle board or particle

14 board a joke?

15 A. Not in the — no, I would say no.

16 Q. I know you say you don't remember this; are you saying

17 you definitely didn't say this, or are you saying you

18 don't recall it one way or the other?

19 A. It's very unlikely that I would have ever joked about

20 another client's work in that way. It's not what I do.

21 It's not what I do. So I would wholeheartedly say

22 I didn't say that.

23 Q. Right.

24 A. Again, I think this is just an individual potentially

25 feathering their nest to support an argument they had.

108

1 That's my take on it.  
 2 Q. When you say "feathering their nest to support an  
 3 argument", what do you mean?  
 4 A. Saying that, "So—and—so said this so therefore he must  
 5 have known" or whatever. It's like — it's not what  
 6 I do. I don't joke like that about other people's —  
 7 clients' confidential information.  
 8 Q. I understand that, I understand that you're trying your  
 9 best to assist us with your recollection, but I don't  
 10 think it's necessary for you to comment on the evidence.  
 11 A. Okay, that's fine, yeah.  
 12 Q. That is Mr Roper's evidence, and I take it from what  
 13 you're saying that you don't agree with his  
 14 recollection.  
 15 A. No.  
 16 Q. And that you deny, do you, that you said what he says  
 17 you said?  
 18 A. Yes.  
 19 Q. Now, can I then turn to the report for the February 2014  
 20 test.  
 21 I would like to start at page 35 of your statement  
 22 {BRE00005768/35} at paragraph 145. You say there, in  
 23 answer to a question at Q7(a):  
 24 "Is it correct that no report was produced? If not,  
 25 please identify the relevant report or reports. If it

109

1 is correct, please explain why no report was produced."  
 2 You say:  
 3 "As far as I recall, no formal report was issued  
 4 following this test. It was not unusual for the test  
 5 sponsor to be asked if they wanted a formal report or  
 6 not, and it is my understanding that in this case no  
 7 formal report was requested."  
 8 You say it's not unusual or wasn't unusual for test  
 9 sponsors to be asked if they wanted a report. Did you  
 10 actually ask Celotex?  
 11 A. I think I possibly did, but I can't remember in which  
 12 way or whether it was done by somebody else. I can't  
 13 remember asking them directly.  
 14 Q. If we go to page 47 of your statement {BRE00005768/47},  
 15 please, let's look together at paragraph 196. The  
 16 question you're answering there, Q8(m), is:  
 17 "Did you or any other representative of the BRE  
 18 write to Celotex in respect of this test and/or provide  
 19 to Celotex any test data?"  
 20 At paragraph 196 you say:  
 21 "I cannot recall whether this test data and/or any  
 22 related information was provided to Celotex following  
 23 this test. Having reviewed the test files and the  
 24 documents disclosed by BRE to the Inquiry, I do not  
 25 believe I have seen any evidence that any such

110

1 information was given to Celotex."  
 2 Now, let's just look at some of the contemporaneous  
 3 documents together.  
 4 Can we go to {CEL00000842}, please.  
 5 A. Can I just point something out before you move? In the  
 6 previous paragraph, I think in the paragraph below there  
 7 was something where I do say that some data was sent.  
 8 Was it paragraph 147, I think.  
 9 Q. Well, let's have a look at that {BRE00005768/35}.  
 10 A. I understand that the test data and photographs — oh,  
 11 no, sorry, that's my —  
 12 Q. You want me to look at paragraph 147, do you?  
 13 A. 146, sorry. I thought — oh, yes, it said about  
 14 a secured pdf being sent.  
 15 Q. Yes. Are you able, where you're sitting, to manipulate  
 16 the screen? Because I was on paragraph 196 and I was  
 17 wondering how you could —  
 18 A. No, I'm not touching anything.  
 19 Q. Have you got a photographic memory of your statement?  
 20 A. No, I just saw Mr — something there, I just saw it as  
 21 you were talking.  
 22 Q. What did you see?  
 23 A. It says:  
 24 "I believe that [Mr] Howard considered this  
 25 request ... "

111

1 So:  
 2 "Although no formal report was requested, I believe  
 3 that the test sponsor, Celotex, did subsequently request  
 4 a copy of the data recorded by BRE during the test.  
 5 I believe that [Mr] Howard considered this request and  
 6 that, ultimately, the data was released in the form of  
 7 a 'secured' pdf document."  
 8 Yeah.  
 9 Q. I was just —  
 10 A. Yeah.  
 11 Q. I'm asking you, you see, about paragraph 196.  
 12 A. Yes.  
 13 Q. So how could you remember to go back to 146?  
 14 A. I just noticed that that is there, and it's in context  
 15 with what you are just about to ask me, I think. So,  
 16 sorry, I put you off your train.  
 17 Q. I wasn't sure how you were about to ask me that. I'm  
 18 looking at paragraph 196, and was about to show you  
 19 a document. Then you said, "Look at paragraph 146". Do  
 20 you remember whether it was paragraph 146 or any other  
 21 number that you wanted to go to?  
 22 A. It was 146, sorry, it was this one.  
 23 SIR MARTIN MOORE-BICK: The answer may be, Mr Millett, that  
 24 we were looking at 145, and it's possible that Mr Clark  
 25 did what I did, which was to read ahead into

112

1 paragraph 146 while you were speaking, and therefore it  
 2 was fresh in his mind. At least I had no difficulty  
 3 remembering that.  
 4 A. That's exactly what I did, sir, that's correct, yes.  
 5 MR MILLETT: I was seeking to just explore with the witness  
 6 what he did do, but —  
 7 A. Yes, carry on, I put you off your train.  
 8 Q. Not at all.  
 9 {CEL00000842}. This is an email sent by Mr Roper to  
 10 Dr Patel and Mr Cooper of IFC on 17 February 2014 in  
 11 which he says:  
 12 "Please find attached preliminary data of our test  
 13 on Friday."  
 14 We can see the attachment to that. It's at  
 15 {CEL00000843}, and that's the document he attaches.  
 16 This is the thermocouple data for the February test,  
 17 isn't it?  
 18 A. It is a version of it, but that is an unprocessed, raw  
 19 set of data, unapproved and not issued by the BRE.  
 20 Q. Not issued by the BRE?  
 21 A. No, it was something we would have print — he could  
 22 have printed to take away with him for his own  
 23 reference, but it's — because of the system, all of the  
 24 graphs would be broken down into their component parts,  
 25 and they would be titled and headed and the project

113

1 number and all of that would be put on there. So this  
 2 isn't data that has been produced officially through BRE  
 3 channels.  
 4 Q. Let's just take it in stages.  
 5 My question was: is this the thermocouple data from  
 6 the February test?  
 7 A. Erm ...  
 8 Q. Well, let me ask you: what is it?  
 9 A. It is the whole data set from what I would say is  
 10 an 8414 test, but because it's not labelled as to who  
 11 the sponsor is, I could not say if it was from that test  
 12 or not.  
 13 Q. Right.  
 14 Well, this is the document that Mr Roper attached to  
 15 his email to Dr Patel and Mr Cooper of IFC on  
 16 17 February in the email I've just shown you.  
 17 A. Okay.  
 18 Q. Did you send this document to Mr Roper?  
 19 A. No, he would have probably been given that on the day.  
 20 Q. By whom?  
 21 A. By me. That looks like that's my writing.  
 22 Q. That was another question I had. That's —  
 23 A. Yes.  
 24 Q. — your writing, is it? I see.  
 25 At what point would you have given him this document

114

1 on the day?  
 2 A. It was customary to — once everything had settled down,  
 3 we would process the data just to give them a very vague  
 4 understanding of how things had panned out in terms of  
 5 what was going on, but it would be caveated that it  
 6 isn't official and it was subject to change.  
 7 An example is if you look at the orange and blue and  
 8 purple, without actually sitting and looking at the  
 9 data, how do I know where those channels are? It's  
 10 very — without having the spreadsheet in front of me,  
 11 there's nothing to say that test has passed or failed.  
 12 Q. You say, "it would be caveated that it isn't official".  
 13 Can you just show me where it says that?  
 14 A. No, that would be verbally.  
 15 Q. So talk us through what happened, then. Was there  
 16 a conversation you had with Mr Roper during which you  
 17 gave him this document?  
 18 A. Yes. It started a long time ago. So even at the period  
 19 where Dr Sarah Colwell was in charge of the testing and  
 20 would be client-facing more than I was, we would print  
 21 the data in its raw form on the day and we would show  
 22 that to the client, and it would be — we would say to  
 23 them, "Look, this is what we've got, you'll need to  
 24 understand that this is raw data, it's subject to  
 25 change, it's — we need to check that every level is in

115

1 the right place", and we would — from that, we would do  
 2 something like the order of six or seven thermocouple  
 3 data plots for each level. And the fact that they've  
 4 sent it on is not what they're supposed to do.  
 5 Q. When you gave this document to Mr Roper, what did you  
 6 say?  
 7 A. As I said, "This is the data from today's test, this is  
 8 an indication only, this is for your records only, and  
 9 it's not official", so they shouldn't have been sending  
 10 it out, and to use that as an argument to an external  
 11 consultancy, which I think it was IFC from Parina Patel,  
 12 is not what the data is there for.  
 13 Q. Did you keep a record of the fact that you had given  
 14 this document to Mr Roper?  
 15 A. No, no.  
 16 Q. So a review of the test files would not reveal the fact  
 17 that you had done; is that right?  
 18 A. No, no. There'd been a plot very similar to that, but  
 19 it was literally a piece of paper printed off from the  
 20 raw data.  
 21 Q. When you did your witness statement, can you tell us why  
 22 you didn't refer to this document and explain the  
 23 circumstances in which Mr Roper had come by it?  
 24 A. Because I wasn't aware he had taken it away with him.  
 25 We — they normally don't take — the client doesn't

116

1 normally take it away with them. It wasn't — I don't  
 2 think it was given to him to take away. Maybe he picked  
 3 it up at the end of the meeting. I wasn't aware and  
 4 didn't remember it was given to him.  
 5 Q. Were you not shown this document when you were preparing  
 6 your witness statement?  
 7 A. No, I haven't seen that before.  
 8 Q. Is it right, then, that when you gave Mr Roper this  
 9 document on the day and caveated it in the way you say  
 10 you did, that was, as I think you explained, a normal  
 11 part of BRE practice?  
 12 A. Yes, it was, yes, yes.  
 13 Q. Would you ever follow up with a client such as Celotex  
 14 just to record the fact that you had given them this raw  
 15 data?  
 16 A. We didn't generally give them the paperwork. I'm  
 17 surprised he took it away with him. Maybe he took it  
 18 because his — he needed to report back to his  
 19 management, I think, so maybe we'd said to him, "Right,  
 20 here's a copy you can take", with the usual caveats, and  
 21 he would have been able to use that to prove to his  
 22 hierarchy what had happened. That's the only purpose he  
 23 would have had that for. It was never and should never  
 24 have been given to IFC in that regard.  
 25 Q. You never provided him with the clear terms of

117

1 confidentiality or any rules about what he could and  
 2 couldn't do with the document, did you?  
 3 A. It's in the terms that they sign up to, I think, in the  
 4 BRE terms and conditions, I think, but it's such a long  
 5 time ago, I couldn't remember if it says that. But  
 6 ultimately it's their data, but the problem he has there  
 7 is, as I say, if somebody showed me that, you've showed  
 8 it to me now, the only reason I would believe you that  
 9 that is the Celotex test is because you've told me  
 10 that's what the data is coming from. There's nothing on  
 11 that data to show me when it was taken, who it was taken  
 12 for, what the test was, what the — anything at all in  
 13 there. It could be any random data from any 8414 test.  
 14 So if IFC have relied on that as a data set, then  
 15 I think it's a bit foolish, to be honest.  
 16 Q. Did you tell Mr Roper when you handed him this document  
 17 that he had to keep it strictly within Celotex and not  
 18 consult anybody outside Celotex on what it meant?  
 19 A. Yes, I would have done, yes.  
 20 Q. Would have done, but did you?  
 21 A. I can't recall exactly giving him that information, but  
 22 that was generally the gist of what we would say.  
 23 Q. Now, let's go back to the document, please,  
 24 {CEL00000843}. This is the document we were looking at,  
 25 and at the top of the page we can see some manuscript.

118

1 I think you said that was yours; is that right?  
 2 A. That appears to be my writing, yes.  
 3 Q. Right. What does it signify?  
 4 A. So as you're looking at it, so number 1 to 5 is the —  
 5 so it's a plan view of the test facility, and the  
 6 numbering refers to the numbering of the thermocouple  
 7 channels. So if you see where it says "[Level] 1  
 8 Ext—1", so number 1 is on the main wall furthest to the  
 9 left, and number 8 is on the wing wall, so it's the  
 10 channel numbering.  
 11 Q. Right.  
 12 Now, if we go back to Mr Roper's email of  
 13 17 February 2014 at {CEL00000842}, please, I just want  
 14 to continue with what he says there.  
 15 In the second paragraph, do you see he says:  
 16 "I've spoken to Phil this morning and he sees no  
 17 reason why a classification report cannot be issued as  
 18 it is in his opinion, that extending the test to the  
 19 full duration of 30 mins rather than stopping at 25 mins  
 20 would have made little difference and as shown attached,  
 21 we meet the performance criteria of BR 135 in not  
 22 exceeding 600 degrees within the first 15 mins.  
 23 "Depending on how Phil's peers at the BRE receive  
 24 this, it may be useful if we could set aside a date in  
 25 the diary in which you could dial in to discuss your

119

1 view from the test."  
 2 Do you recall speaking to Mr Roper on the morning of  
 3 17 February 2014?  
 4 A. The answer to your question is: I do not recall, no, and  
 5 that is definitely something I would never say, because  
 6 you cannot extend the duration of a test that you have  
 7 stopped at 25 minutes. That's a physical — well, not  
 8 a physical impossibility, but it doesn't work like that.  
 9 This is something he's made up himself.  
 10 Q. Are you saying that Mr Roper invented the content of the  
 11 conversation that is recorded in this paragraph I've  
 12 just read to you?  
 13 A. Yes.  
 14 Q. Really?  
 15 A. Yes. You can't carry on a test that has been stopped.  
 16 It's been stopped. It doesn't work like that.  
 17 Q. Let's just break it down. He says:  
 18 "I've spoken to Phil this morning and he sees no  
 19 reason why a classification report cannot be issued ..."  
 20 Just pausing there, did you tell him that?  
 21 A. No.  
 22 Q. And you're definite about that, are you?  
 23 A. I'm definite, yes, without a doubt.  
 24 Q. You're saying he has concocted that statement and  
 25 attributed it to you?

120

1 A. Yes.  
 2 Q. Right.  
 3 Then he goes on —  
 4 A. The test was stopped. You don't carry on. Once a test  
 5 has stopped, it's stopped.  
 6 Q. Well, let's go on to see what he says:  
 7 " ... as it is in his opinion, that extending the  
 8 test to the full duration of 30 mins rather than  
 9 stopping at 25 mins would have made little  
 10 difference ..."  
 11 Pausing there, did you tell him that?  
 12 A. Erm ... no, because I'd never — we never had this  
 13 conversation, so by definition I couldn't have told him  
 14 that, no.  
 15 Q. You're saying he has concocted that; is that right?  
 16 A. Yes. Yes.  
 17 Q. The next part of the sentence:  
 18 " ... and as shown attached, we meet the performance  
 19 criteria of BR 135 in not exceeding 600 degrees within  
 20 the first 15 mins."  
 21 Again, did you say that?  
 22 A. No.  
 23 Q. Again, do you say that Mr Roper has concocted that?  
 24 A. Yes, because BR 135 isn't just temperature, it's got  
 25 other criteria that you have to meet.

121

1 Q. Yes, but one of the criteria in BR 135 is that it  
 2 shouldn't exceed 600 degrees within the first  
 3 15 minutes.  
 4 A. Yeah, but it doesn't say, "We have met one of the  
 5 criteria of BR 135".  
 6 Q. Well, of course, as you know, Mr Roper was not an expert  
 7 as you were, and he is passing on to those who are the  
 8 gist of what he says you told him.  
 9 A. Yes.  
 10 Q. But you're not prepared to give him the benefit at least  
 11 of that doubt?  
 12 A. Sorry, could you repeat your last question? Give him  
 13 the benefit of, sorry, what?  
 14 Q. He is not an expert. He is passing on the gist of what  
 15 you, as an expert, told him to those he has retained as  
 16 experts. Are you not prepared to give him the benefit  
 17 of the doubt that at least that's how he understood it?  
 18 A. I would if the conversation had taken place, but the  
 19 conversation never took place. It was not my remit to  
 20 discuss whether or not something had passed or met the  
 21 criteria of BR 135, and my clear definition would be:  
 22 no, the test stopped at 30 minutes. You didn't even  
 23 meet the first — 25 minutes, sorry, you didn't even  
 24 meet the first criteria which you require to undertake  
 25 the test, and BS 8414—2 I think at that point stated

122

1 that you had to — in order to undertake  
 2 a classification to BR 135, you had to test the system  
 3 for an hour if it was still burning. So you couldn't  
 4 even extend it to 30 minutes. So he's wholly made that  
 5 up.  
 6 Q. Right. When was the first time you saw this email?  
 7 A. Just now.  
 8 Q. Of course, this email was put to Mr Roper in his  
 9 evidence in early November, and therefore was put into  
 10 the public domain, and attributes to you a conversation.  
 11 You have had three months in which to tell the Inquiry  
 12 that you not only don't recall this but regard what he  
 13 is saying in this email as a pack of lies. Can you  
 14 explain why this is the first time we're hearing that  
 15 from you?  
 16 A. Because nobody has brought it to my attention until now.  
 17 Q. Were you not following Mr Roper's evidence?  
 18 A. Not all the time, no, no. I've got a day job to do.  
 19 I saw some of it, but I did not see every single part of  
 20 it, no.  
 21 Q. This email was not, I think, referred to in your  
 22 statement, was it?  
 23 A. No, because I — until today I've not seen it, no.  
 24 Q. That's why?  
 25 A. Yes, yes.

123

1 Q. I see.  
 2 A. And had I seen it, I would have spelt out exactly what  
 3 I've said to you just now. It's not correct.  
 4 Q. Let's see how we go.  
 5 {BRE00005808}. This is an email you sent to  
 6 Stephen Howard on 19 February 2014, so just two days  
 7 after the email of 17 February we've seen from Mr Roper,  
 8 and this is internal. You've attached the data, and you  
 9 say:  
 10 "Steve, attached is the data for the Celotex test  
 11 for you to look at. I have also included a still of the  
 12 system at the time the crib was extinguished with the  
 13 complete panels superimposed to show where the flames  
 14 are in comparison to the panels and panel joints."  
 15 Do you see that?  
 16 A. Yes, I see that.  
 17 Q. Now, the attachments, I'm not sure we need to go to  
 18 them, but if people want to they're at {BRE00005809},  
 19 that's the full test data, and {BRE00005810} is the  
 20 photograph. I don't think it's necessary to go to that,  
 21 but do you remember attaching the full test data and  
 22 a photograph?  
 23 A. I do, yes, and that would have been fully processed  
 24 data, not the raw form.  
 25 Q. What was the point of your sending this data to

124



1 Mr Howard?

2 A. I think he had asked me how it had performed in

3 a conversation, and I said I'd forward him on the test

4 data and my basis for terminating.

5 Q. Given the early termination, why was there any need for

6 him to see the data?

7 A. Because ultimately, although the termination's there, on

8 occasions he would want to understand what had gone on,

9 and ultimately because the decision to issue a BR 135 or

10 not fell with him, he would need to see the data as

11 well, and because he obviously wasn't there, he would

12 need some explanation as to why he would then

13 subsequently say we can't issue a BR 135 for this.

14 Q. That rather tells us that, at least at this time, you

15 were contemplating having or perhaps starting to have

16 a conversation internally at BRE about whether or not

17 the February 2014 Celotex test could be the subject of

18 a BR 135 classification.

19 A. Every test has that conversation, it's not unique to

20 Kingspan — sorry, to Celotex at all. It's part of the

21 process of what the test is there for.

22 Q. Yes. So just because the test had to be terminated

23 didn't mean it was full stop, did it?

24 A. Not in terms of — because it's not my decision to make

25 whether the 135 is issued or not, that was Mr Howard's

125

1 decision, so he has to have that information to enable

2 him to make that.

3 Q. Right, and the decision hadn't yet been made on

4 17 February, when Mr Roper says you had the conversation

5 with him?

6 A. No, that decision was — hadn't been made by that point

7 at all.

8 Q. So it's possible that you could have had a conversation

9 with Mr Roper about the fact that no decision had yet

10 been made about whether to classify or to produce

11 a BR 135 criteria report?

12 A. A conversation could have been had. I don't recall

13 having a conversation. And had he asked me, I would —

14 well, it's not my place to say, but I would caution the

15 fact that it would ever get a classification from the

16 fact it didn't even meet two of the minimum criteria,

17 30 minutes and —

18 Q. Was the purpose of your email to set up a discussion

19 with Mr Howard to consider whether any reliance could be

20 placed on the test?

21 A. I think he must have asked something along the lines of:

22 how did it perform? Because he had been speaking to

23 Jon Roper in the early stages and obviously he had

24 an interest, and that was the easiest way to show how

25 the system had performed, by giving him the data and

126

1 what I classed as the decision to terminate the test.

2 Q. I'm sorry, I'm going to press you on my question again,

3 please.

4 Was the purpose of your email to set up a discussion

5 with Mr Howard to consider whether any reliance could be

6 placed on the test data?

7 A. When you say reliance, how do you mean by reliance?

8 Q. Anything could be done with it.

9 A. No. Not to be done with it, it was just to show that

10 the test had failed, and that's his — the only basis he

11 has, other than being there and watching, or watching

12 the video back.

13 Q. You say at the end of the email, "I am happy to come

14 [to] you to discuss". Do you remember whether there was

15 a discussion with Mr Howard about this test data?

16 A. I can't recall, no.

17 Q. Just to be clear, when you sent him the data for the

18 Celotex test for him to look at, just tell us in simple

19 terms what precisely the purpose of him looking at it

20 was?

21 A. Because he could see the ... how the system had

22 performed in terms of whether it passed or failed —

23 Q. So was there a question mark about whether in fact it

24 had passed or failed that could only be answered by him

25 looking at the data?

127

1 A. No, because the test has failed by the fact it hasn't

2 actually been undertaken for the full duration.

3 Q. Yes. So in your last answer, when you said, in answer

4 to my question, "how the system had performed in terms

5 of whether it passed or failed", was that the question

6 that Mr Howard had to answer based on the data?

7 A. Ultimately, yes, because that decision comes from him.

8 My decision is to terminate the test. My decision isn't

9 to determine whether or not the system had failed.

10 Q. Yes, and if it was the decision of Mr Howard to decide

11 whether or not the test had passed or failed, at the

12 time that Mr Roper sent his email on 17th, that decision

13 had not yet been made, had it?

14 A. No, it hadn't, no.

15 Q. And it was a question that needed to be answered, wasn't

16 it?

17 A. Yes, it was, yes, without a doubt.

18 Q. Isn't it entirely possible that you would have

19 communicated at least that fact to him, namely the fact

20 that it had been terminated did not preclude the

21 possibility that it had passed?

22 A. Erm ... no, it can't pass.

23 Q. If it can't pass, why is Mr Howard deciding whether it

24 had passed or failed?

25 A. So ultimately the decision to terminate the test came

128

1 from me. Mr — the way it worked at BRE was that  
 2 Mr Howard would communicate to the client directly that  
 3 the system had passed or failed, and in this instance he  
 4 would have and should have phoned up Mr Roper and said,  
 5 "The test had been terminated at 25 minutes, so  
 6 therefore it didn't meet the first criteria that you  
 7 continue the test for the full duration, so it would —  
 8 it's failed on that. I've looked at the data", and if  
 9 any of the channels were outside the required  
 10 thresholds, then he would have said, "and also these  
 11 thermocouples have breached the requirement and  
 12 therefore it wouldn't have passed on that basis".

13 But he wouldn't be able to make that decision having  
 14 not seen the data. To ask him just to make a phone call  
 15 off the bat without any information would be unfair on  
 16 him.

17 Q. You don't, in this email, say to Stephen Howard, "Well,  
 18 here's the data, but I terminated the test at 25 minutes  
 19 so it's going to be a fail". Why didn't you give him  
 20 that assistance or direction?

21 A. Because that's not my decision to make.

22 Q. We don't see you actually referring to the fact that you  
 23 terminated the test at 25 minutes at all in this email.  
 24 Why is that?

25 A. I may have already had the conversation with him. He

129

1 may have come down earlier. Just because — we did talk  
 2 to each other, because — it might be — may have been  
 3 a continuation of a conversation that was had earlier in  
 4 the day. He may have come down to the hall and said,  
 5 "Can you pass — forward me on the data so I can have  
 6 a look", and it wasn't an email correspondence in that  
 7 regard saying, "Oh, this has passed, I'll send you the  
 8 data in that regard". We may have discussed it  
 9 face-to-face earlier in the day.

10 Q. If you discussed it earlier in the day and told him you  
 11 had terminated the test, why didn't your email just say,  
 12 "Please write to the clients to tell them that it's  
 13 a fail because the test was terminated early"?

14 A. Because that's not my decision to make.

15 Q. No, but it's his decision to make based on what you're  
 16 providing him, and —

17 A. No, but in the position I am, he is a senior member of  
 18 staff. It's not my job to tell him what he should and  
 19 shouldn't say.

20 Q. Very well.

21 It's right, isn't it, that in the end, of course, no  
 22 classification report was issued for the February test,  
 23 was it?

24 A. That's correct, yes.

25 Q. Can you remember how and when you confirmed to Mr Roper

130

1 that the test had failed?

2 A. Erm ... no.

3 Q. Was there an email or any kind of communication between  
 4 you and him about it?

5 A. Not from me, no. I think if any — like I said earlier,  
 6 I think any decision would have come from  
 7 Stephen Howard.

8 Q. Right.

9 Let's turn to the May 2014 test then, and I would  
 10 like to examine with you discussions before the test.

11 In your statement at paragraph 200 at the bottom of  
 12 page 48 {BRE00005768/48}, if we could just go to that,  
 13 please, you say — and I should just read you the  
 14 question before I show you what you say in response.

15 It's Q8(p), and that is as follows:

16 "As far as you are aware, what discussions and/or  
 17 correspondence between the BRE and the Celotex followed  
 18 the test on 14 February 2014? What was the nature of  
 19 any such communication? Please identify all relevant  
 20 individuals by name and give full details of the nature  
 21 and content of any meetings, calls or correspondence.  
 22 Please describe your own part in any such discussions."

23 Then you say:

24 "Following the test on 14 February 2014, I believe  
 25 I had discussions with Mr Roper about undertaking

131

1 a further test, with a changed outer decorative layer."

2 My question at this point is: do you mean  
 3 immediately after the test when you say "Following the  
 4 test"?

5 A. Not immediately after the test, probably several days,  
 6 a week or so after that. Not the next day, no.

7 Q. We haven't seen any documented discussion. Did it take  
 8 place by telephone?

9 A. Potentially, yes. I can't recall, to be honest.

10 Q. Right. How well do you recall the fact that it wasn't  
 11 immediately after the test but, as you say, a week or so  
 12 later?

13 A. Because my understanding was that the test was  
 14 undertaken in May, so this is February, March, April,  
 15 May, so it was quite a while before, and at that point  
 16 they hadn't even decided if they were going to re-test,  
 17 I don't think.

18 Q. Did you in fact have any further conversations with  
 19 Mr Roper?

20 A. Sorry, can you say that again?

21 Q. I'm so sorry.

22 Did you in fact have further conversations with  
 23 Mr Roper after the 14 February test?

24 A. I must have done in some way or another because they  
 25 then commissioned a second test.

132

1 Q. Let's look at {BRE00005432}, please. This is an email  
 2 from you to Mr Roper on 28 February 2014, copied to  
 3 Stephen Howard, and you say:  
 4 "Hi Jon, with reference to our conversation it is  
 5 possible that we could make a wall (our wall 2)  
 6 available for early to mid April 2014. As suggested  
 7 there may be a cost implication which from memory may be  
 8 around £2.5k. If you think this may be of interest  
 9 please let me know and I will confirm costs and  
 10 timescales."  
 11 Do you recall that conversation?  
 12 A. I don't recall exactly what was said on the  
 13 conversation, but I think what happened was they —  
 14 initially, my understanding was that they were only  
 15 planning on doing one test, and they then came back  
 16 saying that they wanted to do a second test, and this  
 17 is, what, sort of two weeks later. But we only had  
 18 a wall which was already blocked up for a part 1 test,  
 19 and the £2,500 is to have that removed so they can get  
 20 on that wall quicker —  
 21 Q. Right.  
 22 A. — without any delay.  
 23 Q. Did Mr Roper explain to you that Celotex were keen to  
 24 re-test quickly?  
 25 A. I can't remember in those terms, but from the fact that

133

1 they commissioned the test, that would have been my  
 2 assumption, yes.  
 3 Q. They were happy, weren't they, in the end to pay the  
 4 extra costs to enable that test to happen in April?  
 5 A. They did pay the costs, yes.  
 6 Q. If we go to {CEL00000869} we will see a signed copy of  
 7 a quotation, and here it is, 14 March 2014. This is the  
 8 BRE's quotation to Celotex, Jonathan Roper, and it says:  
 9 "Dear Jonathan  
 10 "With reference to your discussion with Phil Clark,  
 11 we are pleased to offer our services to carry out the  
 12 work described in this letter, including all costs for  
 13 labour, materials and expenses, but excluding Value  
 14 Added Tax.  
 15 "Scope of works:  
 16 "Conversion of BS 8414 Part 1 test frame to BS 8414  
 17 Part 2 configuration.  
 18 "Cost: £2500 excluding VAT.  
 19 "We will begin the work on receipt of your  
 20 acceptance of this offer."  
 21 Did you see this document at the time?  
 22 A. I might have even written it myself. I don't know, who  
 23 was it signed by?  
 24 Q. If we go to page 2 {CEL00000869/2}, it's signed by  
 25 Stephen Howard.

134

1 A. Then probably no.  
 2 Q. Now, are you aware that Celotex had accepted the cost  
 3 implications of the scheduling of its test?  
 4 A. I would have been because it would have been my role to  
 5 then work with the contractors to get the system — the  
 6 wall removed, so I was aware, yes.  
 7 Q. So is it right that one of the cost implications would  
 8 have been the adaptation of one of the rigs by removing  
 9 the blockwork to enable an SFS system to be used?  
 10 A. That's correct, yes, yes.  
 11 Q. Let's look at {BRE00003532}, please, moving on in the  
 12 story. This is an email from Mr Roper on 24 March 2014  
 13 to Stephen Howard, subject, "quotation", and there are  
 14 attachments. It attaches the signed quotation we've  
 15 just been looking at, and in fact what we've looked at  
 16 does in fact carry Mr Roper's signature on page 3.  
 17 I didn't show you that, but it does.  
 18 This was sent to Stephen Howard, but you can see  
 19 that he says this:  
 20 "Steve,  
 21 "Find attached quotation for conversion of one of  
 22 our rigs to accommodate BS 8414—2 testing.  
 23 "Could you please ask Phil Clark to give me a call  
 24 to discuss testing or forward on his direct line."  
 25 Do you remember having a conversation with Mr Roper

135

1 about this time as this email asks for?  
 2 A. Erm ... not — no. I don't.  
 3 Q. You don't?  
 4 A. No.  
 5 Q. You don't deny that you had a conversation with him?  
 6 A. I don't deny it. I don't remember. If he had, it would  
 7 have been potentially on, "How long would it take to get  
 8 the rig out and when can our guys start?", potentially,  
 9 no more than that.  
 10 Q. Let's look at Mr Roper's statement at {CEL00010052/13}.  
 11 I would like to look at paragraph 5.31 with you, please.  
 12 Mr Roper says:  
 13 "Following our internal discussions, I sought some  
 14 advice from IFC and the BRE. I spoke to Phil about  
 15 thickening the cladding panel to 12mm. I believe we  
 16 also spoke about the option of strengthening the fire  
 17 barrier level with a two panel solution because it  
 18 appeared from the February test that the cladding panel  
 19 had cracked and fallen away which enabled the fire to  
 20 jump around the fire barrier at level 2. I do not think  
 21 that Phil suggested anything specific in this regard."  
 22 Do you agree with Mr Roper's recollection as he  
 23 states it there?  
 24 A. Erm ... no.  
 25 Q. You don't agree with it?

136

1 Do you agree, let's take it in stages — well, let  
 2 me ask you: which part do you not agree with?  
 3 A. That he had the discussion about thickening the panel  
 4 after the test, and the two panel option.  
 5 (Pause)  
 6 Basically all of it.  
 7 Q. Right.  
 8 Now, again, is this that you can't recall or do you  
 9 positively deny ever having had such a conversation?  
 10 A. I don't think I ever had such a conversation.  
 11 Q. You don't think you did. Can you —  
 12 A. To the best of my recollection, I have never had  
 13 a conversation along the lines he's suggested there.  
 14 Q. Right.  
 15 Did Mr Roper mention to you the idea of using  
 16 a layer of magnesium oxide at the level 2 thermocouples?  
 17 A. Not that I'm aware of, no. No.  
 18 Q. Not that you're aware of?  
 19 A. No. We didn't have a conversation along those lines,  
 20 no.  
 21 Q. Are you ruling that out and saying you deny it, or is it  
 22 that you can't —  
 23 A. Yes, I deny it, yes, yes.  
 24 Q. Right.  
 25 So that we're absolutely clear, it's your evidence

137

1 to the Inquiry, is it, that the evidence in  
 2 paragraph 5.31 of Mr Roper's statement as we see here  
 3 does not accord with your recollection?  
 4 A. Indeed, yes, that's correct, yes.  
 5 Q. Are you saying that he's lying when he says this?  
 6 A. I would say he was lying, yes. I cannot recall ever  
 7 having that conversation.  
 8 Q. Yes. I just want to be very clear about this, because  
 9 it may be important. There is a difference, as we've  
 10 established, between having absolutely no recollection  
 11 of something and positively denying that it happened.  
 12 Are you simply saying you have no recollection of this  
 13 conversation in those two respects in particular, or are  
 14 you positively saying that they never happened or it  
 15 never happened?  
 16 A. I would say it never happened. I — yeah. I — yeah,  
 17 I would say it never happened.  
 18 Q. Now, let's look at your witness statement, moving on  
 19 a bit. I want to ask you about delivery notes. At  
 20 page 70 {BRE00005768/70} of your statement,  
 21 paragraph 289, you say — and I'll show you where the  
 22 paragraph starts and then I'll go back to the question  
 23 you're answering:  
 24 "I recall that most of the materials, in particular  
 25 the RS 5000 insulation, were the same for both tests as

138

1 no additional materials were delivered between the two  
 2 tests. This excludes the rainscreen board for which  
 3 a new supply was obtained (it is my understanding that  
 4 there were supply issues with the rainscreen board).  
 5 A delivery note from FGF of the [21st] April 2014  
 6 details the items supplied."  
 7 If we can just go back to the question. The  
 8 question is at Q10(r), so you have that clear in your  
 9 mind. If we just scroll up a little bit to that, above  
 10 paragraph 287, you will see the question there:  
 11 "In what way, way, as far as you understood it, did  
 12 the tested system on 2 May 2014 differ from that tested  
 13 on 14 February 2014? How were any such differences  
 14 recorded? When and by whom?"  
 15 Now, having shown you what you have said there, you  
 16 say that there were no additional materials delivered  
 17 between the two tests apart from the rainscreen cladding  
 18 board.  
 19 Let's look at some contemporaneous documents now, at  
 20 {CEL00001982}, please. This is an email, the second  
 21 email down, from you to Jon Roper on 31 March 2014 and  
 22 you say:  
 23 "Hi John, I hope you're well? I understand that you  
 24 have tried to contact me regards a start date for the  
 25 install of your next system. I am happy to say we are

139

1 ok at this end are happy for things to proceed as  
 2 planned. The wall has been removed and the area will be  
 3 ready for your arrival. I have put you on our wall 1  
 4 which has the wing on the left hand side. Please could  
 5 you let me know about when you are expecting any  
 6 deliveries and I will arrange for the safe storage of  
 7 the items. I will also need the RAMS etc resent so that  
 8 they are current for the new install."  
 9 Then if you go over the page {CEL00001982/2}, it  
 10 just finishing by saying:  
 11 "If you need further info about the test wall please  
 12 let me know."  
 13 He responds in the top email on that page on  
 14 31 March and says:  
 15 "I'm well thank you.  
 16 "I'm in the process of arranging deliveries for  
 17 latter part of this week, early next week. The guys  
 18 from Simco will be arriving Monday morning with the  
 19 steel frame etc.  
 20 "I will arrange for a scissor lift to arrive Friday  
 21 this week.  
 22 "I'll re—send the RAMs etc over today."  
 23 Now, he refers there, as you can see, to Simco  
 24 bringing the steel frame with them. That wasn't  
 25 delivered but turned up prior to the test with the

140

1 contractors assembling that rig; is that right?  
 2 A. I don't recall. If that's what he said, then probably,  
 3 yes. My understanding was that they reused a lot of the  
 4 stuff from the previous wall.  
 5 Q. Right.  
 6 Let's go to {BRE00032372}. This is a manuscript  
 7 document which appears to be a set of delivery notes in  
 8 respect of both the February and the May tests.  
 9 I wonder if you could help me with this. If we go to  
 10 page — well, we have page 1 up on the screen. Do you  
 11 recognise this document?  
 12 A. That appears to be handwritten notes by one of my  
 13 colleagues saying where the thermocouples were spaced  
 14 out, yes.  
 15 Q. Who is that colleague?  
 16 A. I think that's my colleague Tom Lennon's writing.  
 17 Q. Tom Lennon?  
 18 A. You'll have to ask him.  
 19 Q. If we go to page 2 {BRE00032372/2}, we can see  
 20 a delivery note for samples. Do you see that?  
 21 A. Yes, that's from Siderise, yes.  
 22 Q. That's right. That's a sample of one pallet, three  
 23 boxes, and you can see the date it was picked up:  
 24 4 April 2014.  
 25 A. Yes.

141

1 Q. Now, presumably these were being delivered for the  
 2 second test, clearly?  
 3 A. It appears that is the case, yes.  
 4 Q. Yes. Page 3 {BRE00032372/3}, if we go to that, if we  
 5 could have that expanded, I think this is the delivery  
 6 note from FGF that you refer to in your statement, isn't  
 7 it?  
 8 A. It is, yes, and that is my signature.  
 9 Q. Those are the cladding panels; yes?  
 10 A. Yes.  
 11 Q. And as you say, you can see the delivery date in the  
 12 middle of the page under "Delivered", 14 April 2014.  
 13 A. That is correct, yes.  
 14 Q. Then skipping forward very slightly, can we go to page 6  
 15 {BRE00032372/6}, please. This is a delivery note on  
 16 Celotex paper which shows two packs, I think 24 sheets,  
 17 you can see 24 "pieces", of what looks like FR5000,  
 18 in fact.  
 19 A. It says FR5001.  
 20 Q. FR5100.  
 21 A. Yes.  
 22 Q. That's delivered on 7 April 2014, isn't it?  
 23 A. Yes, and that appears to be my signature as well.  
 24 Q. Yes. Just above "Description", you can see there are  
 25 special instructions. Can you see that?

142

1 A. Yes.  
 2 Q. And that says:  
 3 "2 packs (24 sheets) x FR5100 & 24 sheets 12.5mm  
 4 Knauf wallboard — please send best quality boards as  
 5 these are for testing."  
 6 Again, that's your signature, isn't it?  
 7 A. Yes, yes.  
 8 Q. Yes. Again, clearly from the date, this is for the May  
 9 test, not for —  
 10 A. Yes, I agree, yes.  
 11 Q. Do you accept that it isn't right to say that no  
 12 deliveries were made except for the new cladding panels?  
 13 A. Yes, that is an incorrect statement in my thing.  
 14 These — this is the first time I've seen this and  
 15 the ... what was the previous one, sorry? I think the  
 16 only one I can recall seeing was the FGF one.  
 17 Q. That's at page 3 {BRE00032372/3}, which is the one you  
 18 refer to in your statement. Can we see that again?  
 19 A. Yes. I recall that one.  
 20 Q. You weren't shown these other delivery notes when you  
 21 were preparing your statement?  
 22 A. Sorry, say again?  
 23 Q. You weren't shown these other deliveries notes when you  
 24 were preparing your statement?  
 25 A. No, I wasn't, no.

143

1 Q. I see.  
 2 It's right, I think, isn't it, that the only object  
 3 not accounted for between Mr Roper's email and these  
 4 delivery notes is the magnesium oxide that was used?  
 5 A. Yes, yes.  
 6 Q. Let's look at —  
 7 A. There is a delivery note for the magnesium oxide board,  
 8 I thought, from — it came from ... I think it's  
 9 referenced in my statement.  
 10 Q. We're going to look at that.  
 11 A. That's fine, okay, sorry.  
 12 Q. {CEL00001985}.  
 13 A. Can I just — actually, before you move on, what I would  
 14 say is the FGF and the one I think you're about to show,  
 15 I did actually request if there were any other delivery  
 16 notes from BRE and that's all they issued me, so I don't  
 17 know where those other delivery notes came from, and as  
 18 you say, they weren't issued to me.  
 19 Q. Well, they came from BRE's disclosure, so far as I know,  
 20 so —  
 21 A. Okay, they didn't come to me.  
 22 Q. Well, there it is.  
 23 {CEL00001985}. This is a quotation from  
 24 Euroform Products dated 31 March 2014. The delivery  
 25 address is Celotex in Ipswich, and invoice the same, and

144

1 you can see what is identified there as the quantity and  
 2 the product underneath that.  
 3 You can see there:  
 4 "15 [boards] VERSALINER 12mm x 1200mm x 2400mm."  
 5 And then another Versaliner underneath that, and  
 6 then a third entry, "VERSASEALER 252 WHITE". Do you see  
 7 that?  
 8 A. I do indeed, yes. This is an invoice, isn't it?  
 9 Q. This is an invoice, yes. If I called it a quotation,  
 10 that's my mistake.  
 11 A. That's correct, that's fine.  
 12 Q. So an invoice. And it shows, doesn't it, 6 millimetres  
 13 and 12 millimetres of magnesium oxide, because that is  
 14 what the Versaliner product is?  
 15 A. It does, yes, that's correct.  
 16 Q. We can see the delivery address is Celotex.  
 17 Let's look at {CEL00001981} next, please. Note the  
 18 date of the document I've just shown you, as I said, was  
 19 31 March. This is an email from Jon Roper to  
 20 Wayne Smith at SIG on 31 March.  
 21 A. Are SIG the company who supplied the Versaliner? Is  
 22 that correct?  
 23 Q. Well, I was hoping you might be able to help me.  
 24 A. Oh, right, okay. That's SIG — yeah, SIG,  
 25 Sheffield Insulation, yes.

145

1 Q. "Wayne,  
 2 "As discussed, can you please arrange and send over  
 3 an invoice for 15 Versaguard 12mm boards & 6 Versaguard  
 4 6mm boards for delivery to BRE for Monday 7th April."  
 5 Now, we've seen the cash invoice which says the  
 6 delivery address would be Ipswich, but in fact the  
 7 request, as we've seen here in this email, was for  
 8 delivery to the BRE on 7 April.  
 9 Now, both Mr Roper and Mr Hayes told the Inquiry  
 10 that these goods, the Versaguard 12-millimetre boards  
 11 and 6-millimetre boards, were delivered and they assumed  
 12 signed for to the BRE. That's Mr Roper's evidence at  
 13 {Day71/78:10-15} and Mr Hayes {Day74/143} to  
 14 {Day74/144}.  
 15 Turning back to the delivery notes, then, can we  
 16 look at those at {BRE00032372/5}. This is the only  
 17 delivery note for magnesium oxide.  
 18 A. I can see the Celotex one still, sir.  
 19 Q. Yes, but that's dated January 2014, so that looks like  
 20 it was for the February test.  
 21 A. Yes, yes.  
 22 Q. But we've seen, from what I've just shown you, the  
 23 Euroform invoice, that new material including  
 24 6-millimetre boards was ordered by Celotex.  
 25 My first question on this, then, is: do you accept,

146

1 looking at the documents we've got so far, that it isn't  
 2 the case that the May test was done on a rig comprised  
 3 solely of materials left over from the February test?  
 4 A. Yes, you're correct. That was my understanding at the  
 5 time of writing that. That was my recollection. But  
 6 now I've seen these delivery notes, then you're correct,  
 7 yes.  
 8 Q. Can you explain how the delivery of the 6 millimetres of  
 9 magnesium oxide material isn't on your file?  
 10 A. Well, I can't actually see the SIG Euroform delivery  
 11 note.  
 12 Q. No. Well, I showed you the invoice —  
 13 A. It's in my witness pack, the evidence that I've issued.  
 14 It's a green form signed by my colleague Tom Lennon, as  
 15 far as I'm aware. So it's — the Inquiry has it.  
 16 But, interestingly, from my recollection, on the  
 17 delivery note, it doesn't show the 6-millimetre  
 18 magnesium oxide board. My recollection is there was  
 19 only two items on there, the 12-mil and the liner paint  
 20 or whatever it is, the sealing paint. I haven't seen  
 21 an invoice — sorry, a delivery note which shows  
 22 6-millimetre magnesium oxide board. So what I'm saying  
 23 is that the delivery note I don't think reflects the  
 24 invoice that they had.  
 25 Q. I'm not sure what document you're referring to, I think

147

1 is my problem, because we've not seen a green form with  
 2 the 6 millimetres of magnesium oxide in April 2014  
 3 signed for by the BRE.  
 4 A. No, it was with the 12-mil, the 12-mil only.  
 5 Q. That's right.  
 6 A. Yes, yes, yes.  
 7 Q. What I'm after really is the document that shows that  
 8 the 6-millimetre magnesium oxide was delivered into the  
 9 BRE in April 2014.  
 10 A. To my knowledge it never was. I can't recall it being  
 11 delivered.  
 12 Q. Right. So can you explain, therefore, how the delivery  
 13 of the 6-millimetre magnesium oxide material which was  
 14 clearly ordered from Euroform by Mr Roper is not  
 15 documented in your file?  
 16 A. It could have been that the contractor accepted it. It  
 17 wasn't unusual for a driver to turn up and say, "Is this  
 18 so—and-so? I've got a delivery for Celotex", and the  
 19 driver — the installer would take it off. Particularly  
 20 if it was only six boards, it wouldn't necessarily need  
 21 a forklift truck. But I cannot recall it ever being  
 22 delivered to the hall. And if it had, it would be — it  
 23 should have been on that delivery note that we signed  
 24 for by my colleague Tom Lennon, and I don't know why  
 25 it's not.

148

1 Q. Let's go back to {BRE00032372/5} then. We have  
 2 a delivery note on a green form — well, I don't know if  
 3 that's the green form you're talking about, but that is  
 4 the only delivery note for magnesium oxide that we have.  
 5 A. Plasterboard.  
 6 Q. That's January.  
 7 A. Are you looking — you may be looking at something  
 8 different to me, but the one in front of me says  
 9 12-millimetre plasterboard.  
 10 Q. Sorry, no, you're quite right, page 4 is what I'm after  
 11 {BRE00032372/4}. You're absolutely right to correct me,  
 12 I'm looking at page 4.  
 13 A. Yes.  
 14 Q. That's January. What we don't have is a delivery note  
 15 for any 6-millimetre magnesium oxide into the BRE in  
 16 April in accordance with Mr Roper's request that it be  
 17 delivered there.  
 18 A. Yes.  
 19 Q. I'm just trying to understand why that is.  
 20 A. I can't account for that, no, I've no idea.  
 21 Q. I think from what you were telling us just before we got  
 22 distracted back on to the document was that it was  
 23 possible for drivers to deliver small amounts of boards  
 24 into the BRE facility at the request of a client. Is  
 25 that right?

149

1 A. That is right, yes.  
 2 Q. Was there no system in place for ensuring that every  
 3 single piece of material that crossed the BRE's  
 4 threshold destined for a test was documented?  
 5 A. The problem was that we had security guards on the main  
 6 gate and, because of the proximity of the Burn Hall,  
 7 they would basically say, "It needs to go over there"  
 8 and point towards the hall. So we would get materials  
 9 turning up and, as you can see, the delivery notes  
 10 sometimes were signed by other people. So it may have  
 11 been signed by somebody else and then the delivery note  
 12 would have been put with the boards in the hall, so if  
 13 it wasn't collected by one of us, it may have got lost.  
 14 Q. Right. So I think the answer to my question is: no,  
 15 there was no system in place for ensuring that every  
 16 single piece of material that crossed the BRE's  
 17 threshold destined for a test was documented?  
 18 A. If it went through the goods-in system, then it should  
 19 have been, yes. If it came directly to the Burn Hall,  
 20 then I would say no.  
 21 Q. So in other words the system that you had in place was  
 22 not good enough to make sure that every single material  
 23 destined for a test would be accounted for in  
 24 documentary form?  
 25 A. That is correct, yeah, the security guards would

150

1 circumvent the system sometimes, and people being  
 2 people, they would oblige as opposed to annoying the  
 3 lorry driver and would offload it, yes.  
 4 Q. Does that mean it was possible for a test sponsor to  
 5 sneak a piece of kit past the BRE and get it onto the  
 6 rig without the BRE knowing?  
 7 A. Yes, yes, we weren't there all the time. Some of these  
 8 systems could take a week, a week and a half. I've had  
 9 one that took almost three weeks to complete. We  
 10 weren't there 24/7. We didn't have a security guard on  
 11 the door. So, yes, you're right, they could have.  
 12 Q. Does that mean that when you conducted a test, you  
 13 weren't always absolutely sure what the precise make-up  
 14 and composition of the rig you were testing was?  
 15 A. I wouldn't say necessarily, no, but if you've got  
 16 somebody who's going out of their way to deceive, then  
 17 there was a possibility they could do that, if that was  
 18 their intention.  
 19 Q. Right. But you issued — and we'll come to these later  
 20 on — classification reports and test reports which  
 21 stated, without qualification, what the make-up of the  
 22 test rig was in each case; yes?  
 23 A. Yes, yes.  
 24 Q. Did you not have a system of making sure that when you  
 25 wrote those test data reports and classification reports

151

1 you verified or you were able to verify the precise  
 2 make-up of the rig by some sort of check system against  
 3 the materials that had been delivered to the BRE and put  
 4 up on the rig?  
 5 A. Yeah, that would be in part of the process of taking  
 6 photographs of the materials that were there, and to my  
 7 mind I can — I can't recall them ever saying, "Oh, by  
 8 the way, you've got a 6-mil magnesium oxide board that  
 9 you need to be aware of". So ...  
 10 Q. No, I understand that, but, I mean, my question is: they  
 11 may not have said it, but you clearly didn't have  
 12 a system of verifying precisely what it was on each  
 13 occasion that you were testing, because —  
 14 A. I think —  
 15 Q. Let me explain — because it was possible for clients to  
 16 sneak material past the guards and get it on to the rig  
 17 without you knowing?  
 18 A. Yes, I think the reliance very much was on the honesty  
 19 of the client, yeah, you're correct, not to do that,  
 20 yes.  
 21 Q. I see.  
 22 A. And ultimately, as it says, the client is reliant —  
 23 it's to the client to prepare the test rig. We're not  
 24 there to police necessarily every nth degree of what  
 25 they're doing there. There's a large element of trust

152

1 in everything we do.  
 2 Q. Can you explain, then, why it was that Mr Roper, if he  
 3 was setting out to sneak the 6-millimetre magnesium  
 4 oxide past the BRE without them noticing, asked Euroform  
 5 to deliver it to the BRE?  
 6 A. No.  
 7 Q. No.  
 8 A. No. As I say, I can't — I wasn't there all the time.  
 9 I can't recall the delivery, and I think at that point  
 10 in time there were other people working in the hall, so  
 11 it could have been signed by anybody from the BRE staff.  
 12 So, yes, I can't account for that, no.  
 13 MR MILLETT: Now, I want to turn to your involvement in the  
 14 May 2014 test.  
 15 Mr Chairman, I'm sure this isn't becoming a habit,  
 16 but it's a long topic that I won't finish before the  
 17 afternoon break, so this is as good a moment as any.  
 18 SIR MARTIN MOORE—BICK: All right. Well, you put it very  
 19 persuasively, Mr Millett.  
 20 We will take a break early. It's after 3.10. Shall  
 21 we say until 3.30? That's about right, isn't it?  
 22 Right, Mr Clark, we'll have our afternoon break  
 23 early, we'll have it now. We'll come back at 3.30,  
 24 please.  
 25 THE WITNESS: That's fine, yes.

153

1 SIR MARTIN MOORE—BICK: No talking about your evidence over  
 2 the break. All right?  
 3 THE WITNESS: Thank you very much.  
 4 SIR MARTIN MOORE—BICK: Thank you very much.  
 5 (3.12 pm)  
 6 (A short break)  
 7 (3.30 pm)  
 8 SIR MARTIN MOORE—BICK: Welcome back, everyone. We can  
 9 continue taking evidence from Mr Clark.  
 10 Mr Clark, you are there, are you? You can see me  
 11 and hear me?  
 12 THE WITNESS: I'm here, sir, yes, I can see you and hear  
 13 you.  
 14 SIR MARTIN MOORE—BICK: Thank you very much, and you're  
 15 ready to carry on, I hope?  
 16 THE WITNESS: Indeed I am, yes.  
 17 SIR MARTIN MOORE—BICK: Thank you.  
 18 Yes, Mr Millett, when you're ready.  
 19 MR MILLETT: Thank you very much.  
 20 Mr Clark, hello again.  
 21 Now, I want to go on, please, to your involvement in  
 22 the May 2014 test itself.  
 23 Can I ask you, please, first to go to page 62 of  
 24 your witness statement {BRE00005768/62} and look at  
 25 paragraph 256.

154

1 This is in answer to the question at Q10(a):  
 2 "Who had overall oversight of this test?"  
 3 And your evidence is:  
 4 "It is my recollection that I had oversight of this  
 5 particular test and that, at that time, I was working  
 6 under the overall direction of Stephen Howard of BRE."  
 7 Were you the project officer or the officer in  
 8 charge of the May 2014 test?  
 9 A. Both.  
 10 Q. Both. As such, it's right, isn't it, I think, from your  
 11 earlier evidence, that you would have been responsible  
 12 for ensuring that the standard operating procedures were  
 13 followed?  
 14 A. Yes, that's correct.  
 15 Q. Can we look at the pro forma standard operating  
 16 procedure document. This is at {BRE00005773/3}.  
 17 Now, it's at page 3. The document you can see is  
 18 entitled "Cladding Test Data File & Report Preparation  
 19 Sheet". I think this dates from May 2013, doesn't it?  
 20 A. I think that's correct, yes.  
 21 Q. Yes. We can see that from page 2 of the email chain  
 22 immediately above it {BRE00005773/2}. We can see that  
 23 from the bottom of the previous page. There is an email  
 24 from you to Tony Baker, 15 May 2013.  
 25 A. Yes.

155

1 Q. Yes?  
 2 A. Yes.  
 3 Q. Yes.  
 4 Now, the checklist, if we go to page 3  
 5 {BRE00005773/3}, includes, can you see, receiving client  
 6 specifications; that's the second item down, isn't it?  
 7 A. Yes.  
 8 Q. And also, if you look a little bit lower down the list  
 9 there, four items down, "Undertaken component check and  
 10 obtained samples"; yes?  
 11 A. Yes.  
 12 Q. Is there any reason to think that this checklist would  
 13 not have been completed for the May 2014 test?  
 14 A. In reality, I don't think we signed and — every single  
 15 sheet. It was — initially it was put forward as  
 16 a protocol to follow, but we didn't necessarily sign and  
 17 date every sheet as we went, it was to — a document to  
 18 follow.  
 19 Q. Now, you see, we can't find a completed test data file  
 20 and report preparation sheet such as this in your  
 21 disclosure for the May 2014 test. Am I right that there  
 22 actually wasn't one?  
 23 A. You are, yes.  
 24 Q. Right. Would that be normal or would that be abnormal?  
 25 A. That would be normal.

156



1 Q. What was the point of having a detailed standard  
2 operating procedure document such as this, introduced  
3 only a year before, which you didn't use?  
4 A. It was proposed at the time that we were trying to  
5 sort of improve the way things were done and we were  
6 looking to try and do things a little bit more  
7 electronically, and I pulled together these sheets,  
8 I think, if I recall correctly, in order to aid that,  
9 and they were essentially more of an aide memoire than  
10 a sheet that we would follow.  
11 Q. Right. Did you use this as an aide memoire on this  
12 occasion?  
13 A. Erm —  
14 Q. The May test.  
15 A. Not by directly printing it out, no, I would say no.  
16 Q. Did you undertake a component check?  
17 A. On that test, I think I possibly did, yes.  
18 Q. How did you go about that?  
19 A. This is ... it's one of the things that's been playing  
20 on my mind in terms of — there are photographic  
21 evidence of all of the component parts. One of the  
22 things that worried me, I can't recall seeing the  
23 insulation and the final decorative rainscreen go on,  
24 and I think that probably happened while I was on my  
25 first aid course. So that would have and should have

157

1 been done by whoever was deputising for me when I was  
2 out of the office.  
3 Q. Who was that?  
4 A. I can't recall, but I think it would have been  
5 Stephen Howard.  
6 Q. Now, we know from Celotex that no updated drawings were  
7 prepared in advance of the May test. So what  
8 specifications were you working from when building the  
9 rig?  
10 A. I wasn't building the rig, Simco were building the rig.  
11 Q. Right. What specifications were being worked on, then?  
12 A. My understanding was they were using the same drawings  
13 that were issued for the February 2014 test.  
14 Q. But it can't have been the same, because as you knew,  
15 a different system was being tested; no?  
16 A. Yes, if you — I think there's an email that comes  
17 further on, which you may ask — which they re-issued  
18 the new drawings after the test.  
19 Q. We're going to come to that.  
20 A. Yes.  
21 Q. My question is: did you see any updated or revised  
22 drawings ahead of the May test?  
23 A. No.  
24 Q. Did it not strike you as strange that you hadn't?  
25 A. No, because to all intents and purposes, they were

158

1 repeating the same test.  
2 Q. Why would they be repeating the same test if the first  
3 one —  
4 A. Sorry, not repeating the same test, the only difference  
5 was the changed outer sheet.  
6 Q. Did you see any drawings which reflected that revision?  
7 A. I can't recall I did, no.  
8 Q. No.  
9 A. They would have been and they should have been issued to  
10 Simco, so Simco — it was usual that the contractor  
11 would turn up with their own drawings to construct the  
12 rig, and the person who constructed the first rig was  
13 the same person who constructed the second rig.  
14 Q. Mr Clark, looking at the SOP, the standard operating  
15 procedure, the second item I showed you on the list was  
16 "Received client system specifications".  
17 A. Yes.  
18 Q. Would it therefore not be surprising to you, even though  
19 that document wasn't followed to the letter, not to have  
20 received the client system specifications for the May  
21 test, given that it was different from the February  
22 test?  
23 A. Not always. I think I've said in one of my other  
24 paragraphs that it wasn't unusual for a client to issue  
25 drawings after the test had taken place. So it wasn't

159

1 unusual, no.  
2 Q. Right. Did you ever see any revised drawings which  
3 applied to the May test after the May test?  
4 A. Not directly after. I think there's an email from  
5 Paul Evans which attaches some updated drawings.  
6 Q. We'll come to those.  
7 A. Yes, yes.  
8 Q. At any rate, you accept that you didn't see any updated  
9 or revised drawings for the May test before the May  
10 test?  
11 A. I may have done. I am aware there are about four  
12 versions or five versions of the test drawings, so there  
13 may have been a package in there, but I haven't seen  
14 them in preparation for this statement, so I can't  
15 confirm.  
16 Q. Well, we know for a fact that no updated drawings were  
17 prepared in advance of the May test. That is clear from  
18 the evidence we've seen so far. So would you take it  
19 from me that you couldn't have seen any updated revised  
20 test drawing —  
21 A. I think that was my understanding, yes.  
22 Q. My question is: did that not strike you as surprising,  
23 that you had not been provided before the test with  
24 revised drawings?  
25 A. No, because we were already in — we already had a set

160

1 of drawings from the previous test.  
 2 Q. Mr Clark, we're going round in circles. That doesn't  
 3 make any sense because the previous test wasn't going to  
 4 be the same system as tested. The new system was  
 5 different.

6 Given that the new system was different, given that  
 7 your SOP required that you received client system  
 8 specifications, did it not strike you as surprising that  
 9 you never received any updated drawings from your client  
 10 before the test?

11 A. No.

12 Q. Why is that?

13 A. Because to — my understanding was it was an exact  
 14 repeat except for the change of one item, which was the  
 15 external rainscreen board, and everything else was  
 16 exactly the same.

17 Q. Why would that excuse not providing an updated drawing,  
 18 even if just to show that changed detail, so that you  
 19 had a record?

20 A. Because the — in reality, the drawings were issued to  
 21 the contractor putting the system together, and it just  
 22 wasn't unusual for us not to get the final drawings  
 23 ahead of the test. It was ... it wasn't unusual, so —

24 SIR MARTIN MOORE—BICK: Mr Millett, forgive me for  
 25 interrupting.

161

1 Mr Clark, just help me with this: wasn't it  
 2 essential for the BRE to know exactly the composition of  
 3 the system being tested?

4 A. Yes, we did, sir, other than there was — my  
 5 understanding was that it was only one change to be made  
 6 and —

7 SIR MARTIN MOORE—BICK: Well, that's what you expected, but  
 8 am I not right in thinking that one thing that you  
 9 needed to know was the actual composition of the system  
 10 that was put into the test?

11 A. We did, yes, but we didn't need that on the day of the  
 12 test.

13 SIR MARTIN MOORE—BICK: Right. So my next question is: how  
 14 did you determine definitively that the rainscreen  
 15 cladding on this test was what you had been led to  
 16 believe it would be?

17 A. I understand your question, and the answer is from  
 18 checking the delivery notes and checking and measuring  
 19 on site. So, yeah, I understand where you're coming  
 20 from, but it wasn't common practice to insist to have  
 21 them at the beginning. Maybe it should have been, but  
 22 it wasn't.

23 SIR MARTIN MOORE—BICK: So when did you obtain this  
 24 information on a definitive basis?

25 A. I think they were issued just before the second draft of

162

1 the test report. I think there's an email which  
 2 pertains to that.

3 SIR MARTIN MOORE—BICK: Based on what, an examination of the  
 4 test rig after the fire?

5 A. No, so they're issued by the client, so they came from  
 6 Celotex via Simco — or Simco via Celotex, sorry.

7 SIR MARTIN MOORE—BICK: You're now talking about the  
 8 drawings, are you?

9 A. Drawings, yes, sir, that's correct.

10 SIR MARTIN MOORE—BICK: All right.

11 Yes, all right, thank you, Mr Millett.

12 MR MILLETT: Yes, Mr Chairman.

13 That's drawings. We are going to come back to  
 14 drawings and we will certainly look at those July emails  
 15 later.

16 Photographs. Were photographs of each component  
 17 layer taken as this list requires? I say this list,  
 18 it's gone from the screen. The report preparation  
 19 sheet. Were photographs taken of each component layer?

20 A. As far as I was aware, yes, they were, yes.

21 Q. You say as far as you were aware; have you seen them?

22 A. I've seen a package of photographs that show them, yes,  
 23 and I think they're in my witness statement, as far as  
 24 I'm aware.

25 Q. Those are the photographs you are referring to —

163

1 A. Yes, yes.

2 Q. — those.

3 What about samples?

4 A. Erm —

5 Q. The list says "Undertake component check and obtain  
 6 samples". Did the BRE receive any samples ahead of the  
 7 May test?

8 A. So that I think — I think that list refers to — does  
 9 it refer to LPS as well, 1582 in there? So if it does,  
 10 that is a requirement for that certification. There is  
 11 no requirement for 8414 to take samples. So the answer  
 12 is no, we didn't take samples.

13 Q. Right.

14 Can we go to page 65 of your statement  
 15 {BRE00005768/65}, please, at paragraph 267. You say in  
 16 267 — and this is in answer to the following question  
 17 at 10(h):

18 "What, if any, checks were carried out by the BRE  
 19 during the installation of the test rig or thereafter  
 20 but prior to the start of the test? Who was responsible  
 21 for carrying out any such checks?"

22 Your answer is:

23 "The test file indicates that the checks carried out  
 24 by BRE involved identifying and photographing the  
 25 components and the structure as it was installed.

164

1 Having reviewed the test file, it would appear that  
2 photographs were only taken prior to the external  
3 decorative arrangement being applied. I do not know the  
4 reason for this; I believe I may have been away  
5 (possibly on a first aid course) during the strip-down  
6 in particular."

7 We looked at that evidence this morning when you  
8 were correcting it about the timing of the first aid  
9 course.

10 When you say that you checked the test file, "Having  
11 reviewed the test file", were you provided with access  
12 to the full file, Mr Clark?

13 A. I was given access to the printed copy as much as  
14 possible, yes. The paper copy, which I think had been  
15 scanned in by BRE.

16 Q. Right.

17 If you go to the next paragraph in your statement,  
18 268 — I'll come back to 267 in a moment — you say:

19 "In terms of how these checks were carried out, it  
20 would be usual for me to ask the test sponsor or  
21 contractor to identify all of the component parts and to  
22 describe where in the system they were used. Once all  
23 of the components were identified, I would photograph  
24 them, either individually or with the box in which they  
25 were supplied (if details of the item were printed on

165

1 the box, for example). If it was not possible to get  
2 a scale for the item, it was usual for the item to be  
3 photographed with a ruler to enable the size of the item  
4 to be confirmed. Wherever possible the item would be  
5 also photographed once it had been installed onto the  
6 system. There was a set of standard operating  
7 procedures which detailed the items to be recorded.  
8 Pages 424–431 are an example of this process.  
9 Additional photographs of the components would also be  
10 printed off and put onto the project file."

11 Is the project file the same as the test file?

12 A. Yes, it is.

13 Q. Can you just help me: if you had access, as you say, to  
14 the full test file when preparing your statement, why in  
15 this paragraph do you describe what would normally occur  
16 instead of simply providing the evidence of what checks  
17 were actually carried out as the test file shows?

18 A. Was the question what tests ... maybe I've  
19 misinterpreted the question. Maybe I — as you say,  
20 maybe I should have answered it directly ... sorry,  
21 carry on.

22 Q. Did you understand my question, Mr Clark?

23 A. I did, yes, yes. Yes, I think I've been too  
24 general there, yes, you're right, I should have answered  
25 what was checked — what was checked.

166

1 Q. So what we've got here is not a description of what was  
2 in the test file, but what you say the normal practice  
3 would have shown had the normal practice been followed?

4 A. I've probably been too general there, yes.

5 Q. Why? Why didn't you just explain what checks the test  
6 file showed in answer to the question?

7 A. Can you show me the answer again, sorry?

8 Q. I've just read it out at length, the whole of  
9 paragraph 268.

10 A. No, no, that's fine. No, I think maybe you're right,  
11 I was being too generalised there. Maybe I've  
12 misanswered the question.

13 Q. Yes, but why? It's a simple question: what checks were  
14 carried out during the installation of the test rig?

15 You had the test file in front of you, as you have said.  
16 You chose to answer it in this "would have" way. Why?

17 A. I can't explain why, no. It's just — at the time of  
18 writing, it seemed the way — the right way to answer  
19 it.

20 Q. Well, from the test file, can you say that each of the  
21 things you say you would have expected to find in  
22 paragraph 268 you did find in the test file?

23 A. Yes, as far as I'm aware, yes, yeah, apart from the fact  
24 I couldn't explain why there was no photographs of the  
25 external screen going up. That's the only thing I can't

167

1 explain. But everything else is there, as far as I'm  
2 aware.

3 Q. You see, you say in the third line of paragraph 268:

4 "Once all of the components were identified, I would  
5 photograph them, either individually or with the  
6 box ..."

7 Then:

8 "Wherever possible the item would be also  
9 photographed once it had been installed onto the  
10 system."

11 Now, the test file that you reviewed presumably did  
12 not show the photographs or have on it the photographs  
13 of each of the components on the rig?

14 A. I think it does.

15 Q. You think it does?

16 A. I think it does, yes, yes.

17 Q. Does it follow that there are photographs in the test  
18 file that show the presence of the 6-millimetre  
19 magnesium oxide layer at the —

20 A. Erm —

21 Q. — top of the second thermocouple?

22 A. This is the thing that's been racking my brain and  
23 that's why I mentioned it in there, is because I can't  
24 account for that, and having — and the evidence you  
25 read in this morning, with the fact that I was actually

168

1 out of the office for two of the days when the  
 2 construction was going ahead, it appears to me that  
 3 those photographs weren't taken by whoever was  
 4 deputising for me, and that's why they're not there.  
 5 Q. Are you speculating about this or is it something you  
 6 have actually investigated and got to the bottom of?  
 7 A. In terms of who should have taken them and didn't, you  
 8 mean?  
 9 Q. In terms of why there are no photographs on the test  
 10 file of the magnesium oxide layer — layers, there are  
 11 two of them.  
 12 A. There are — not of the magnesium oxide layer, but there  
 13 are of the overall test rig, I think, so they would have  
 14 been taken the day of the test once it had been fully  
 15 instrumented, so there are, so — but no, I can't — I'm  
 16 not — yeah, I'm speculating that that's probably what  
 17 happened. I can't account for it, because I don't think  
 18 I was in the office when that layer was put up.  
 19 Q. Going back to paragraph 267, you say in the second  
 20 sentence:  
 21 "Having reviewed the test file, it would appear that  
 22 photographs were only taken prior to the external  
 23 decorative arrangement being applied. I do not know the  
 24 reason for this; I believe I may have been away ..."  
 25 Well, you may have been away, Mr Clark, but did you

169

1 not investigate the reason for this?  
 2 A. You mean before, as I wrote this ...  
 3 Q. Let's take it in stages.  
 4 When did you first become aware that the photographs  
 5 on the file were only taken before the external  
 6 decorative arrangement had been applied?  
 7 A. When I was issued the test file as part of the  
 8 submission.  
 9 Q. As part of the submission for you to do your witness  
 10 statement?  
 11 A. Yes, that's correct.  
 12 Q. Right. You noticed it then?  
 13 A. I did.  
 14 Q. Did you not at that stage ask anybody at the BRE or your  
 15 solicitors to investigate the reason why the photographs  
 16 on the file were only those taken before the external  
 17 decorative arrangement had been applied?  
 18 A. No, I didn't, and I don't think that would be a question  
 19 they would ever be able to ask — answer.  
 20 Q. Right.  
 21 A. I suppose the question could have been to BRE, "Could  
 22 you search the system and see if there are any?" But to  
 23 be honest, I don't know whether they would have been  
 24 able to identify them particularly easily.  
 25 Q. Did you not look at the test file after the test?

170

1 A. Yes, I would have done, yes.  
 2 Q. When was the first time that you looked at the test file  
 3 after the test?  
 4 A. It would have been when I did the first draft of the  
 5 test report, I think.  
 6 Q. So late June?  
 7 A. Yes.  
 8 Q. Did you not notice at that stage that the photographs in  
 9 the test file were only those taken before the external  
 10 decorative arrangement had been applied?  
 11 A. I don't specifically recall, but the thing is, they're  
 12 not relevant necessarily for the final report, because  
 13 we always take the outer layer. So my concern was that  
 14 there was nothing showing it going up in stages. What  
 15 you need to remember is that we — what we would say to  
 16 the client is we would ask them to put each individual  
 17 layer in and then they would call us when that component  
 18 was finished. So, say, for example, if they put in the  
 19 metal frame up, we would take a picture of that. When  
 20 they put the board at the back, we would put that on,  
 21 and then when they put the insulation on, we would take  
 22 a picture of that. So I would have expected whoever was  
 23 deputising for me while I was out to take some  
 24 photographs of the outer screen going on.  
 25 But the fact that we'd taken them on the day of the

171

1 test sort of gave us the information we need, but we  
 2 should have had a few more, I think.  
 3 Q. I think from the last answer you're giving us is that  
 4 you would expect there to be — is this right? — on the  
 5 test file photographs showing the application of each of  
 6 the component elements, layer by layer, of the test rig?  
 7 A. There should be, yes, yes.  
 8 Q. And when you first reviewed the test file in late  
 9 May 2014, after the test, did you not notice that such  
 10 photographs were missing from the test file?  
 11 A. It doesn't come to mind that I did, no.  
 12 Q. How carefully did you review the test file at that  
 13 stage?  
 14 A. Well enough to draft the report, but —  
 15 Q. Right.  
 16 A. Yes.  
 17 Q. Not well enough to notice that the photographs you would  
 18 normally expect to be there were not there?  
 19 A. I did, but I can't recall what the action was. I may  
 20 have pointed it out, but I can't recall.  
 21 Q. Right.  
 22 Let's look at the photographs, or let's look at what  
 23 I'm going to ask you were the photographs.  
 24 {BRE00030675}, please.  
 25 Now, are these the photographs that you're referring

172

1 to in your statement?  
 2 A. That appears to be, yes, that is a set of photographs,  
 3 yes. So that one there particularly would have been  
 4 taken possibly on the day before the test. So that  
 5 would have been an indication as to where the  
 6 thermocouples were put, yes.  
 7 Q. Well, you say that. If we look down, we can see in fact  
 8 there are, if you go to page 4 {BRE00030675/4}, some  
 9 photographs where the level 2 thermocouples and the top  
 10 of the rig were as yet uncovered, weren't they?  
 11 A. They go in after the system is completed.  
 12 Q. Yes, and the magnesium oxide that we know is later there  
 13 was not yet on the rig at that stage?  
 14 A. No, so that's the — what we would call the sheathing  
 15 board layer going in there.  
 16 Q. Exactly. Yes.  
 17 Now, in your statement at page 69 {BRE00005768/69},  
 18 I'm going to take this quite quickly, I just want to  
 19 show you paragraphs 284 and 285, again in answering the  
 20 question:  
 21 "What information or documents were made available  
 22 to you and to Tony Baker ..."  
 23 In 284 you say what would have been on the test file  
 24 as opposed to saying what was on the test file or what  
 25 was available to you; yes?

173

1 A. Yes, yes.  
 2 Q. And I think —  
 3 A. It's my wording, I think. Sorry.  
 4 Q. Well, you say:  
 5 "Each test or project would have a test data file  
 6 ... Each project would also have an accompanying  
 7 electronic project file ..."  
 8 Et cetera, et cetera, and you explain what would be  
 9 on that file, and that included:  
 10 "... safety data sheets and risk assessments ..."  
 11 Files would have included items as shown in ..."  
 12 And you give examples.  
 13 Then at paragraph 285 you say that that would have  
 14 been available to Mr Baker.  
 15 Again, you haven't answered the question what was  
 16 available to you; you have answered the question what  
 17 would have been available to you. Again, why did you do  
 18 that?  
 19 A. I think that's the difference between "was" and "would",  
 20 that's just the way I wrote it. It should have been —  
 21 if I rewrote it again, I would have probably said that,  
 22 as you say, the project file was available.  
 23 Q. Well, just help me with this: did you understand the  
 24 question, "What information or documents were made  
 25 available to you"? That's asking you what you had; yes?

174

1 A. Yes, yes.  
 2 Q. Yes.  
 3 A. Yes.  
 4 Q. Why did you answer it what you would have had, as  
 5 opposed actually to investigating what you in fact did  
 6 have?  
 7 A. I think probably at the time I was being too general  
 8 again. It's just the way I wrote the sentences. Yeah,  
 9 maybe I slightly misinterpreted how I should have  
 10 written the question.  
 11 Q. How could you misinterpret? Again, it's the same point.  
 12 How could you misinterpret a very simple question: what  
 13 was available to you?  
 14 A. Well, I think that sentence makes it clear, it was,  
 15 that's what was available. It should have said "was" as  
 16 opposed to "would have been".  
 17 Q. Well, are you saying this is just misdrafting, or are  
 18 you actually saying that this is actually evidence of  
 19 what you would have expected to find but not evidence of  
 20 what you actually did find in an investigation that you  
 21 undertook in order to answer the question?  
 22 A. No, no, that's what I did find, as far as I'm aware.  
 23 That's why the references to the pages, I think, are  
 24 there.  
 25 Q. None of those items that you refer to actually relate to

175

1 the May test, do they?  
 2 A. Sorry, say again.  
 3 Q. None of the items you refer to at pages 581, 582, 583 to  
 4 596 and pages 250 to 261 actually relate to the May 2014  
 5 test at all.  
 6 A. Do they not? I would be surprised if they don't.  
 7 Q. Right. Well, let's have a look.  
 8 Can we go to — I'm wrong, I think, in relation to  
 9 581 and 582, but the rest of the documents don't. Let  
 10 me see if I can put this to you.  
 11 Can we go to {BRE00005769/583}. So the first two  
 12 do, 581 and 582 do relate to the May test, but 583 to  
 13 596, let's have a look at that.  
 14 Is this the document you were referring to there?  
 15 A. That is a site safety induction form.  
 16 Q. Yes.  
 17 A. Yes.  
 18 Q. And it's dated 28 January 2014, isn't it?  
 19 A. Yes.  
 20 Q. And do you agree with me that this is the  
 21 contractor/client management sheet, health and safety  
 22 method statement, Powered Access Licence and health and  
 23 safety product datasheet for Marley Eternit panels and  
 24 Celotex insulation for the February test?  
 25 A. It appears to be, yes, but we wouldn't necessarily

176

1 always re-induct somebody if they'd already been in the  
 2 hall.  
 3 Q. We don't have the same for the May test, do we?  
 4 A. I'm not certain, no. But, as I say, it was common  
 5 practice — so if a contractor hadn't only just come to  
 6 site, they would have this induction. If they then came  
 7 back to site, they wouldn't necessarily have to have  
 8 a new re-induction, because it was a short period of  
 9 time, and the difference between January and May was  
 10 long enough not to require them to have it.  
 11 Q. Let's look at {BRE00005769/250} to {BRE00005769/261}.  
 12 You refer to these as well.  
 13 These are photographs. Again, just take a moment to  
 14 look at them. They are all photographs for the February  
 15 test, aren't they?  
 16 A. Erm ... they ... yes, looking at where the wing wall is,  
 17 they appear to be, yes.  
 18 Q. Exactly.  
 19 A. Yes.  
 20 Q. Not the May test?  
 21 A. Erm ... they appear not to be. If the wing wall is on  
 22 your right-hand side, then it would appear to be the  
 23 incorrect one, yes.  
 24 Q. What about the photographs of the May test? We've got  
 25 those and we'll come to them, but you didn't refer to

177

1 those when you were answering the question what  
 2 information was available to you.  
 3 My question is: did you not look at those  
 4 photographs when answering this question at this part of  
 5 your statement?  
 6 A. I thought I had, yes.  
 7 Q. Well, you hadn't. We can go back to paragraph 284 and  
 8 285 of your statement on page 69 {BRE00005768/69}.  
 9 A. I think these page numbers were put in by BRE's first  
 10 set of lawyers, so I don't know ... I did check but  
 11 maybe I just hadn't noticed they didn't refer to the  
 12 right test.  
 13 Q. Right. Okay.  
 14 Would it not have been simpler just to take the May  
 15 test file, whatever it was, and just state the contents  
 16 of it?  
 17 A. It would have been, yes, I agree, yes.  
 18 Q. Yes.  
 19 A. It was my interpretation of how I answered the question.  
 20 Obviously I have been a bit too vague there, I admit  
 21 that, yes.  
 22 Q. Now, I want to look with you about your awareness of  
 23 magnesium oxide.  
 24 Now, in general, was it correct, as Ivor Meredith  
 25 told the Inquiry, and he was from Kingspan — and this

178

1 is {Day75/50:8–14} — that the BRE would normally go  
 2 through the build-up with a fine-tooth comb and make  
 3 sure that it was the same as the plans?  
 4 A. Depends how you define a fine-tooth comb. I wouldn't  
 5 say we would measure every single gap or every single —  
 6 not every single nth degree, no, we would get a general  
 7 overview of what was being built. But a fine-tooth comb  
 8 is probably a bit too over the top, I would say.  
 9 Q. Well, it's a question of degree.  
 10 Mr Meredith's evidence was that you had control of  
 11 the Burn Hall and that there were people reporting to  
 12 you running around with clipboards checking this kind of  
 13 thing, is how he put it. Would you agree?  
 14 A. No, not particularly, no. I wasn't in charge of  
 15 anybody. I have no staff.  
 16 Q. Well, whoever was in charge of whom, would you agree  
 17 that the staff in charge of the Burn Hall supervising  
 18 a test would go through the build-up with a degree of  
 19 precision to make sure that they knew exactly what it  
 20 was that was being tested?  
 21 A. Yeah, that's — that is — there is a degree of truth in  
 22 there, but I wouldn't say a fine-tooth comb is the right  
 23 word to use, basically.  
 24 Q. Right.  
 25 Can you explain how you, as you say, missed the

179

1 presence of a layer of magnesium oxide at the  
 2 second-level thermocouples and at the top of the rig?  
 3 A. No, I can't, and this is what has been playing in my  
 4 mind for a long time. The ... so in terms of the way  
 5 things were done is we would — to a certain extent, we  
 6 relied on the client delivering what they had said they  
 7 were going to deliver. One of the things ... when it  
 8 was brought to my attention that it was there, it was:  
 9 how did it get there? And this is why I then reviewed  
 10 to sort of see what my movements were as that layer was  
 11 going on.  
 12 So I would have returned to the Burn Hall the day  
 13 before the test and would be running around  
 14 instrumenting and all that sort of thing, and to this  
 15 day I still can't think why I missed it. No, I can't  
 16 account for that at all. And it's —  
 17 Q. One possibility, Mr Clark, is that you didn't miss it,  
 18 and what Mr Hayes and Mr Roper have told the Inquiry on  
 19 oath is correct and that you knew it was there.  
 20 A. No, I didn't know it was there, no.  
 21 Q. I'm putting it to you that you did?  
 22 A. I refute that, no.  
 23 Q. Right.  
 24 A. (inaudible) not.  
 25 Q. Let's look at the photographs, {BRE00030681}. This is

180

1 a collection of photos, and we will see that they're  
 2 labelled at the bottom of the page with a manuscript  
 3 number "PN:295369". That's the report number, isn't it,  
 4 for the May 2014 test?  
 5 A. Yes, but that isn't my writing.  
 6 Q. No, I didn't ask you that.  
 7 A. Well, I think it's relevant, but carry on.  
 8 Q. Okay. Why is it — well, tell us whose it was.  
 9 A. I don't recall who that is. I don't recognise it.  
 10 Q. Why do you say it's relevant?  
 11 A. Because when — if I printed these sheets off, I would  
 12 put the label on like that, I would then put page 1  
 13 of — put the page numbers, and then I would sign it  
 14 with my — put my signature on it.  
 15 Q. Can you confirm that these are indeed photographs of the  
 16 May 2014 test?  
 17 A. They — yes, I would say they are, looking at the  
 18 colouring.  
 19 Q. You say looking at the colouring; to be clear, is that  
 20 because we can see the distinctive mixed cladding  
 21 colours?  
 22 A. Indeed, yes, that's correct, yes.  
 23 Q. Do you know who took these photographs?  
 24 A. Erm, I don't, because other people did have access to  
 25 the AV equipment and — or the iPad that we were using.

181

1 Q. Now, do you know where these were filed or kept?  
 2 A. They should have been on the test file, but I've not  
 3 seen these, I can't recall.  
 4 Q. Well, they should have been on the test file, I think we  
 5 can certainly agree with that —  
 6 A. No, I mean, electronically, sorry, on the BRE electronic  
 7 system.  
 8 Q. Right, but you say they weren't?  
 9 A. I haven't seen them since I've been requested to give  
 10 evidence, no.  
 11 Q. Did you see them when you wrote the first draft of your  
 12 report in the —  
 13 A. No, this is — today is the first time I've seen them.  
 14 Q. Can you explain where they were filed or where they were  
 15 kept, or at least why they weren't on the test file?  
 16 A. No, and one of the things you need to be aware of is  
 17 that post the fire at the tower, all of the systems  
 18 that — both paper and electronic, were locked down at  
 19 BRE, so I had no access to any files on any of the  
 20 systems. So anything that I was given, I was reliant on  
 21 BRE to provide me.  
 22 Q. Well, we understand from the BRE that these photographs  
 23 formed part of the test file, but given what you have  
 24 said in your statement at paragraph 267, namely that the  
 25 only photographs you saw were those taken prior to the

182

1 external cladding being applied, do we take it that  
 2 these were not on the version of the test file you saw?  
 3 A. I think that's correct, yes, yes.  
 4 Q. So just to be clear, today is the first time you have  
 5 ever seen these photographs?  
 6 A. Yes.  
 7 Q. Really?  
 8 Can I ask you to look at the top right—hand picture.  
 9 That's a close—up of an edge. We might be able to blow  
 10 it up a little bit better without destroying the  
 11 visibility of the image.  
 12 A. Did you say top right, sorry?  
 13 Q. Top right, yes. That's I think as well as we're going  
 14 to do.  
 15 You can see a white board behind the orange cladding  
 16 panel, can't you?  
 17 A. No, not from where I'm looking, no. Unless we're  
 18 looking at different pictures. I'm looking at page 1,  
 19 top right—hand corner, just where the blue line is  
 20 coming down.  
 21 Q. Yes. Let me try a different one. Let me try the  
 22 left—hand side, then.  
 23 If you look at the top left—hand photograph —  
 24 A. Oh, I can there, yes, definitely.  
 25 Q. Yes, you can see there clearly a white board behind the

183

1 orange cladding panel which is not present behind the  
 2 cladding panel below it; yes?  
 3 A. Yes.  
 4 Q. Now, we know from Mr Roper that that was the  
 5 6—millimetre magnesium oxide layer, and he said that at  
 6 {Day71/139:6–14}.  
 7 A. Yes, yes.  
 8 Q. Can you explain how you failed to notice that there was  
 9 that layer apparently undisclosed behind the orange  
 10 panel?  
 11 A. For context, that is something in the order of 6 metres  
 12 off the ground, 7 metres off the ground. That is  
 13 taken — I would look to see — has been taken from the  
 14 access platform from the scissor lift, the — that was  
 15 used to access. So I would say that's been taken from  
 16 at height in close proximity and had I — if I didn't  
 17 have a reason to go up there, I wouldn't have gone up  
 18 there, and I don't think I would have had a reason to go  
 19 there because the test was being instrumented by other  
 20 people.  
 21 Q. It would have taken a little time, wouldn't it, for the  
 22 magnesium oxide layer to be applied in two layers across  
 23 this rig, first layer at the level 2 thermocouple and  
 24 the second layer at the top of the rig? It would have  
 25 taken a little time to do that, wouldn't it?

184

1 A. Yes, it would have done, yes, yes.  
 2 Q. And you're saying you just didn't see that being  
 3 applied?  
 4 A. No, I wasn't in the office when it was being done.  
 5 Q. Somebody at the BRE must have seen it being applied,  
 6 though, mustn't they?  
 7 A. I think they would have done, yeah, somebody should have  
 8 done, but nobody had pointed it out to me.  
 9 Q. Well, let me explore that a little bit.  
 10 You say you weren't in the office. Who was  
 11 reporting to you on the build-up of this rig at that  
 12 time?  
 13 A. Erm ... I think ... I can't recall who had deputised.  
 14 It was usual that if I was going out of the building,  
 15 I would inform obviously my line manager because they  
 16 signed off my health and safety course. At the time we  
 17 had an apprentice, but he was — I think he was there  
 18 for too short a time where I was happy for him to be  
 19 left by himself, and I can't recall who was deputising.  
 20 I would have more than likely asked Steve Howard to  
 21 cover while I was out.  
 22 Q. How long were you out of the office for?  
 23 A. Two days.  
 24 Q. Two days is a long enough time to ensure that you had  
 25 a senior and responsible person who would report to you

185

1 in place?  
 2 A. Pretty much, yes, yes.  
 3 Q. It's not like, "Oh, I'm nipping out for lunch"; two days  
 4 is —  
 5 A. Oh, yes, yeah, without a doubt, yes.  
 6 Q. So it would have required some organisation on your  
 7 part, wouldn't it?  
 8 A. It would have done, yes, yes.  
 9 Q. Can you not recall who it was that you organised to take  
 10 your place?  
 11 A. No, to be honest, I can't. It could have been  
 12 Stephen Howard. My colleague Tom Lennon occasionally  
 13 would deputise if I was there — if I wasn't in, and  
 14 I think by 2014 it might have been ... we were just  
 15 getting a new Burn Hall manager at that point, so if he  
 16 was in place, he may have been covering then. I can't  
 17 remember his start date.  
 18 But the honest truth is I can't remember who was  
 19 deputising for me and I haven't seen anything that  
 20 indicates who was.  
 21 Q. Right.  
 22 Whoever was deputising for you — and you say you  
 23 can't recall — can you think of any reason why they  
 24 wouldn't have noticed these layers of magnesium oxide  
 25 going up onto the rig?

186

1 A. As I said earlier, it was — what we would ask the  
 2 client to do would be to let us know when they get to  
 3 key points. I would — so if, say, for example, they  
 4 were putting the layer over the whole system, we  
 5 wouldn't necessarily always take a picture when they  
 6 were halfway through. It might be we say, "Right, we've  
 7 got the bit we want at the back, we've got all the  
 8 cavity barriers in place, can you let us know when  
 9 you've finished putting the outer façade on", and then  
 10 somebody would go off and do something else and they'll  
 11 come back and say, "We've finished the façade, that's —  
 12 you can take the photos now". So there wasn't always  
 13 somebody there through the whole of the process. We  
 14 weren't stood there watching every single board that  
 15 goes on.  
 16 Q. No, I can just about understand that, but given that  
 17 there was nobody there watching every single board that  
 18 went on, was that not all the more reason to have  
 19 a reliable system of checks to make sure that you did  
 20 know what test sponsors had put on the rig?  
 21 A. Yes, to a certain degree, I agree, yes, yes.  
 22 Q. Yes. It's just (inaudible), isn't it, that for  
 23 two days —  
 24 A. No, it's the first (inaudible) question.  
 25 Q. Looking at the right-hand side of the photographs, you

187

1 can see that the bottom edge of the orange panel  
 2 protrudes very slightly over the top edge of the grey  
 3 panel beneath it.  
 4 A. Erm ...  
 5 Q. Actually the middle photograph is, I think, a better  
 6 example of that. Can you see that there is an overhang?  
 7 A. It's not clear in those photographs, I can't see.  
 8 Q. Did you notice a protrusion or overlap at the time of  
 9 the test?  
 10 A. No. I just noticed how —  
 11 Q. I'll show you a better photograph. Go to the second  
 12 layer down, the middle photograph there. That shows  
 13 a pretty pronounced overhang, doesn't it? The orange  
 14 layer overhangs the grey layer immediately below it by,  
 15 in fact, 2 millimetres, and you can see that, can't you?  
 16 A. You can from that — you can see there is a darker line,  
 17 but that's 8.5 metres in the air, you can't see that  
 18 from that ...  
 19 Q. Did you inspect the rig as completed before the test?  
 20 A. Not from a high level, no, I don't think I possibly did.  
 21 Q. You didn't notice that there was a 2-millimetre  
 22 overhang?  
 23 A. No.  
 24 Q. You didn't notice that the façade was not entirely  
 25 flush?

188



1 A. No, as I said, that's — I think that first board is —  
 2 to the base from the floor is 7 metres, the top is  
 3 almost 8.5/9 — 8.5 metres. You need access equipment  
 4 to get to that, and you can't see from the edge without  
 5 leaning over the barrier. So, no, it's all away from  
 6 where you would normally see walking up the stairs,  
 7 et cetera. So it would easily be missed.  
 8 Q. Let's look at some more photographs. {BRE00030674},  
 9 please. This is the longer set of photographs that we  
 10 have.  
 11 Do you know why the two—page set of photographs with  
 12 the signature that you don't recognise has become  
 13 separated and is a separate document from this longer  
 14 set?  
 15 A. Because I think these ones are GoPro — are they of the  
 16 test? So I think they're taken every sort of  
 17 30 seconds, maybe, throughout the test. And again, that  
 18 isn't my writing, so I don't know who prepared these.  
 19 Q. When you say that isn't your writing, you mean the  
 20 reference to —  
 21 A. The writing, and that's not mine.  
 22 Q. Did you —  
 23 A. Sorry, carry on.  
 24 Q. Did you want to say something?  
 25 A. Again, if it was, I would sign them with my name.

189

1 Q. Right.  
 2 Did you review these images, whether they're  
 3 photographs or stills from a GoPro, at the time you  
 4 first reviewed the test file?  
 5 A. I don't think I did, because they're not relevant for  
 6 writing the test report.  
 7 Q. Did you, looking at the previous photographs or these  
 8 photographs, notice that there was an orange layer?  
 9 A. I did, yes, yes, it's obvious, it's there.  
 10 Q. It is. Did you not wonder what it was?  
 11 A. My understanding was it was ... yeah, I did — I think  
 12 I mentioned it didn't look very nice.  
 13 Q. Well, the BRE isn't concerned with how things look. Who  
 14 did you mention it to?  
 15 A. I think we — to Jonathan Roper, I think, there's  
 16 a comment post—test of how untidy it looked and he  
 17 commented it himself.  
 18 Q. Did you ask him why they'd put a strip of orange, or  
 19 actually "ruby", Marley Eternit at those two places in  
 20 particular on the rig?  
 21 A. No, I didn't, no.  
 22 Q. I mean, it was odd enough for you to notice that it  
 23 looked ugly; why didn't you ask him what its technical  
 24 function was?  
 25 A. Because my understanding at the time — I don't know if

190

1 I've got this from something else, but my understanding  
 2 is that there was a short — he had struggled to get  
 3 hold of material in short notice, I think that was  
 4 Celotex. I think at around the time there was  
 5 a shortage of some description, I just assumed that was  
 6 all he could get in the short notice he had.  
 7 Q. Now, you say in your statement — and we'll come back to  
 8 the orange layer in a moment, or perhaps tomorrow, but  
 9 we may get to it — if you go back to paragraph — no,  
 10 I think we've probably covered that.  
 11 Let's look at the question of the ruby colour. Can  
 12 we go to paragraph 252 of your statement at page 61  
 13 {BRE00005768/61}. You say there:  
 14 "From my review of photographs relating to this  
 15 test, including at Figure 3 of the test report, it  
 16 appears possible that the 8mm 'ruby' board was used on  
 17 the external wall of the test system (the orange board  
 18 near the top on Figure 3); if so (and I have no way of  
 19 knowing for certain), this was not recorded in the test  
 20 report."  
 21 If we go to page 66 of your witness statement  
 22 {BRE00005768/66} at paragraph 269, you say there, and  
 23 I'll show you the question you're answering:  
 24 "Did you have any discussions with any individual  
 25 working on installation of the test rig for Simco or for

191

1 Celotex as to the test, any of the components of the  
 2 test rig or any other related matter? Are you aware of  
 3 Tony Baker, or any other representative of BRE, having  
 4 any such discussion? If so, please set out your  
 5 recollections in respect of any such discussions."  
 6 You say:  
 7 "I had a conversation with Mr Roper of Celotex about  
 8 the colour of the facade, but I do not have a clear  
 9 memory of it. If my recollection is correct, I pointed  
 10 out that there might be potential differences in the  
 11 fire spread over the surface of different coloured  
 12 material. However, Mr Roper assured me that Celotex was  
 13 aware of this and had taken this into account when  
 14 specifying the material to be used. I think the  
 15 explanation was that there was a shortage of the  
 16 particular rainscreen material available at that time  
 17 and this was the only material that they could source  
 18 within the time available. I cannot recall any other  
 19 conversations with respect to the test rig taking  
 20 place."  
 21 Now, notwithstanding that discussion that you  
 22 recall, you didn't actually record the difference in  
 23 material on the façade element of the test rig anywhere  
 24 in the reports, did you?  
 25 A. In terms of the colours, do you mean?

192

1 Q. Well, in terms of the materials, in terms of the colours  
2 and what they were, the product.  
3 A. No, because the assumption was that they were the same  
4 thickness throughout and there would be no need to  
5 differentiate them in that regard.  
6 Q. Well, you see, you say in your statement that you had  
7 had a concern that there might be potential differences  
8 in the fire spread over the surface of different  
9 coloured material. "Mr Roper assured me", you say,  
10 "that Celotex had taken that into account when  
11 specifying the material". Why didn't you identify that  
12 assurance at the very least in your report?  
13 A. Because it's not something that is written into  
14 a BS 8414 report. It's a statement of fact. It's not,  
15 "I had a conversation with Mr X about this issue".  
16 That's not what the report is for.  
17 Q. Now, what allowed you to rely on Mr Roper's assurance  
18 that there were no potential differences or negligible  
19 potential differences in fire spread?  
20 A. We're reliant on what the client — the client's  
21 information they provide.  
22 Q. Not for fire performance. After all, was that not the  
23 purpose of having this test in the first place?  
24 A. Yes, but if there was, then that would have been ... it  
25 was really to point out that, had it been such that the

193

1 performance of the two boards was so different that it  
2 could potentially, had they not taken it into account,  
3 drive the system to failure. That was the reason for  
4 it, not that there was any other reasoning behind it.  
5 Q. Now, we've seen that the delivery note for the cladding  
6 boards showed on its face — and we can go back to them  
7 if we need to — that the ruby boards, I think they're  
8 called ruby Eternit, were 8 millimetres. Do you  
9 remember seeing that or do we need to go back to it?  
10 A. I remember seeing it but I don't recall seeing it until  
11 it was made clear to me that there was a difference.  
12 Q. Well, why did you not check to make sure that the ruby  
13 boards were the same thickness as the rest of the façade  
14 boards?  
15 A. I'm not certain why. I can't answer that question. It  
16 was an error on my part.  
17 Q. Right.  
18 A. The ... I think the — if I recall, the text on the  
19 delivery note isn't wholly clear. If you didn't read  
20 it, having it straight in front of you, it's quite  
21 difficult to read anyway, so ...  
22 Q. So that wasn't noted on the test file either; is that  
23 right?  
24 A. Yes, that's correct, yes. Although the delivery note  
25 I think was in the test file, as far as I'm aware.

194

1 Q. Wouldn't the thickness of the layer of — I call it  
2 rainscreen — the surface material at that point in the  
3 rig have made a difference potentially to the way in  
4 which the test would have performed?  
5 A. Yes, potentially, yes. Had it been that the system had  
6 performed in a way where it had impacted on that layer,  
7 then, yes, I agree, yeah, definitely.  
8 Q. So why didn't you simply write in the test reports and  
9 the classification report which we'll come to that the  
10 rainscreen element of this system comprised two parts:  
11 one which is white and one which had a thinner layer,  
12 an 8-millimetre layer of ruby Eternit in two places?  
13 A. Because I wasn't aware there was a difference.  
14 Q. Well, you may not have been aware there was a difference  
15 in effect, but you must have known there was  
16 a difference —  
17 A. No, no, sorry — sorry. I mean, I wasn't aware that  
18 there were two thicknesses of material on the rig,  
19 that's why it wasn't mentioned.  
20 Q. So you missed the thickness, you didn't refer to the  
21 colour because you relied on an assurance from the  
22 client that it would have made no difference to  
23 fire spread, and you didn't note it in your report?  
24 A. That is correct, yes, yes.  
25 Q. And you didn't notice the overhang and you didn't notice

195

1 the layer of magnesium oxide behind it at any stage?  
2 A. No, no.  
3 Q. Your deputy didn't report that to you?  
4 A. No.  
5 Q. Yet somebody in the BRE took photographs identifying the  
6 presence of magnesium oxide?  
7 A. They took photographs, but if it was taken by the  
8 apprentice, he may not have known the significance of  
9 it —  
10 Q. Right.  
11 A. — necessarily. So, not to deflect any blame on anybody  
12 else, but if he had taken that not knowing what he was  
13 looking at — he was just taking some photographs, and  
14 if he'd have not turned around and said, "Oh, by the way  
15 I've noticed this" and not drawn it to my attention,  
16 then it would have got missed — did get missed.  
17 Q. This is quite an incredible list of omissions and missed  
18 instances, isn't it?  
19 A. Yes, I probably agree with you, yes.  
20 Q. Yes.  
21 A. Yes, I'm ...  
22 Q. I mean, Mr Clark, isn't the reality that you knew very  
23 well that there was a 6-millimetre magnesium oxide layer  
24 behind it? You were in charge of this test, the  
25 photographs showed it was there, the deputy knew it was

196

1 there, as they must have done, it would have taken time  
 2 to put up, and it was covered over by a perfectly  
 3 obvious ruby—coloured band in two places of a material  
 4 of a different thickness. Surely you must have realised  
 5 what was behind it?  
 6 A. No, I would have reported it. And had I known it,  
 7 I would have stopped the test. I can't see ... it  
 8 served no purpose.  
 9 The thing is, if they were trying to hide it, and  
 10 I was aware of it, then why would you put something on  
 11 the front of another board which had the potential to  
 12 fall off during the test and expose what was behind it?  
 13 It just doesn't make sense. I know I'm not the world's  
 14 cleverest man, but I'm not stupid enough to put two  
 15 different coloured materials on, knowing the dynamics of  
 16 how the boards can fail, and it would fall off and then  
 17 you go, "Well, why is there now a white board there  
 18 where there was an orange board earlier?" It just  
 19 doesn't make sense.  
 20 Q. Mr Chairman, is that a convenient moment?  
 21 I'm so sorry, Mr Clark —  
 22 A. That's fine.  
 23 Q. — did you want to say something at the end?  
 24 A. It — yeah, no, it just doesn't make sense to me.  
 25 MR MILLETT: Mr Chairman, is that a convenient moment?

197

1	INDEX	
2		PAGE
3	MR PHILIP CLARK (affirmed)	1
4		
5	Questions from COUNSEL TO THE INQUIRY	4
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

199

1 SIR MARTIN MOORE—BICK: Is it convenient to you, Mr Millett?  
 2 MR MILLETT: It is.  
 3 SIR MARTIN MOORE—BICK: Very good.  
 4 I think we'll stop there for the day, Mr Clark.  
 5 THE WITNESS: That's fine.  
 6 SIR MARTIN MOORE—BICK: We will resume, please, at  
 7 10 o'clock tomorrow.  
 8 THE WITNESS: Okay.  
 9 SIR MARTIN MOORE—BICK: Again, I must ask you not to talk to  
 10 anyone at all about your evidence or anything relating  
 11 to it over the break.  
 12 THE WITNESS: I understand, yes.  
 13 SIR MARTIN MOORE—BICK: Thank you very much. We'll look  
 14 forward to seeing you tomorrow at 10 o'clock, then,  
 15 please.  
 16 THE WITNESS: Thank you.  
 17 SIR MARTIN MOORE—BICK: Thank you, bye.  
 18 (4.35 pm)  
 19 (The hearing adjourned until 10 am  
 20 on Wednesday, 24 February 2021)  
 21  
 22  
 23  
 24  
 25

198

Opus 2  
Official Court Reporters

bre00005769583 (1) 176:11		cel0001005213 (1) 136:10	116:23	colwell (6) 38:14,15 40:12,14	conclusions (1) 32:7	114:15
bre000057732 (1) 155:22	C	celotex (71) 6:9 14:2 84 44:15	circumvent (1) 151:1	44:19 115:19	concocted (3) 120:24	cope (1) 85:12
bre000057733 (2) 155:16		45:22 63:24 64:10,25	cited (1) 103:7	comb (4) 179:2,4,7,22	121:15,23	copied (1) 133:2
156:5		65:1,14 71:5 72:6,17 73:15	clad (1) 17:6	combination (1) 85:4	conditions (1) 118:4	copies (1) 75:15
bre00005808 (1) 124:5		77:12,21 82:17 83:3,23	cladding (31) 12:5 14:20	combustibility (1) 85:3	conducted (2) 79:17 151:12	copy (8) 56:12,13 57:12
bre00005809 (1) 124:18		86:24 87:10 90:2,4	17:5,25 31:23 41:22	combustible (1) 41:21	conducting (1) 23:4	112:4 117:20 134:6
bre00005810 (1) 124:19		93:20,22 94:1,9,15,17,21	47:5,20 58:25 64:19,19	come (47) 2:2 5:9 12:10	confidence (1) 35:6	165:13,14
bre00030674 (1) 189:8		95:4,24 96:9 101:11,18	65:10 77:12,20 85:3 93:8	14:15 15:23 18:3 21:14	confidential (1) 109:7	core (2) 81:18 85:9
bre00030675 (1) 172:24		104:7,14 107:17	99:18 100:5 136:15,18	22:7 25:20,24 35:4,9,10	confidentiality (1) 118:1	corner (1) 183:19
bre000306754 (1) 173:8		110:10,18,19,22 111:1	139:17 142:9 143:12	40:8 42:18 50:3,13 59:22	confidentially (1) 65:17	correct (46) 6:4 7:22
bre00030681 (1) 180:25		112:3 117:13 118:9,17,18	155:18 162:15 181:20	65:16,23 67:3,14,17 76:1	configuration (1) 134:17	8:2,4,5,23 9:11 11:14 13:8
bre00032372 (1) 141:6		124:10 125:17,20 127:18	183:1,15 184:1,2 194:5	77:2 102:9 103:1 106:4,13	confirm (16) 2:10,14,18	14:21,22 19:3,21 40:25
bre000323722 (1) 141:19		131:17 133:23 134:8 135:2	claimed (1) 10:16	116:23 127:13 130:1,4	6:17,19,24 66:5 68:7	58:20 60:7 68:11 97:19
bre000323723 (2) 142:4		142:16 144:25 145:16	clarification (2) 68:13 69:14	131:6 144:21 151:19	83:8,10 84:13 95:7 96:1	101:24 109:24 110:1 113:4
143:17		146:18,24 148:18 158:6	clarify (2) 74:25 90:25	153:23 158:19 160:6	133:9 160:15 181:15	124:3 130:24 135:10 138:4
bre000323724 (1) 149:11		163:6,6 176:24 191:4	clarifying (1) 54:22	163:13 165:18 172:11	confirmed (2) 130:25 166:4	142:13 145:11,15,22
bre000323725 (2) 146:16		192:1,7,12 193:10	clarity (3) 20:2 55:22 99:6	177:5,25 187:11 191:7	confirming (1) 6:20	147:4,6 149:11 150:25
149:1		cement (16) 15:6 101:18	clark (35) 1:17,18,19,20 4:19	195:9	conflicts (1) 35:18	152:19 155:14,20 163:9
bre000323726 (1) 142:15		103:9 104:7,15,18,23,25	8:24 30:3 52:13 53:1,2,8	comeback (1) 25:24	connect (1) 54:19	170:11 178:24 180:19
breached (1) 129:11		105:12,17,21 107:18,21	83:20 84:2 106:12	comes (3) 92:22 128:7	connor (1) 49:22	181:22 183:3 192:9 194:24
break (27) 3:8,13,16,18 4:3		108:5,12,13	107:4,5,12 112:24 134:10	158:16	consequence (1) 25:20	195:24
5:3,5 46:20,23		cementbased (1) 86:11	135:23 153:22 154:9,10,20	comfort (2) 91:23 98:20	consider (5) 3:2 35:17 45:3	corrected (1) 77:8
52:10,12,13,17,23 89:1,3		cent (1) 101:1	159:14 161:2 162:1 165:12	coming (11) 4:21 9:3 19:6	126:19 127:5	correcting (1) 165:8
106:4,8,12,17 120:17		central (3) 32:11,13,15	166:22 169:25 180:17	23:24 27:18 102:7 103:5	considerations (1) 36:13	correction (2) 7:14 8:6
153:17,20,22 154:2,6		centrally (1) 58:4	196:22 197:21 198:4 199:3	107:15 118:10 162:19	considered (2) 111:24 112:5	corrections (3) 6:2,5 8:24
198:11		centre (19) 14:19,23 15:4	clarks (1) 108:4	183:20	considering (1) 45:7	correctly (1) 157:8
breaks (2) 3:22 5:4		19:20,25 20:12,23	class (3) 92:16 97:6,16	commencing (1) 65:11	consisted (1) 73:11	correspondence (4) 66:3
bres (11) 32:25 33:4,11,13		21:15,24 22:7,9,15,22	classified (1) 127:1	comment (7) 26:1 34:25	consisting (1) 64:18	130:6 131:17,21
39:3 40:9 134:8 144:19		23:8,24 4:3 70:5,10 101:10	classification (14) 43:15,20	91:8 92:25 93:5 109:10	constitute (1) 96:17	cost (4) 133:7 134:18
150:3,16 178:9		certain (22) 6:11 24:15 27:8	46:9,15 80:25 119:17	190:16	construct (2) 88:1 159:11	135:2,7
brian (5) 40:16,17 41:11		29:16 39:12 49:5 56:7	120:19 123:2 125:18	commented (1) 190:17	constructed (4) 8:19 21:1	costs (4) 133:9 134:4,5,12
42:22 43:7		59:18 67:16 68:19 71:11	126:15 130:22 151:20,25	commenting (1) 95:10	159:12,13	couldnt (9) 7:11 38:11 87:19
briefing (1) 28:6		76:22 78:18 91:5 92:4	195:9	comments (2) 86:17 93:8	construction (10) 11:19,20	118:2,5 121:13 123:3
briefly (1) 81:22		97:17 102:25 177:4 180:5	classified (1) 43:17	commercial (9) 33:4,7,11,25	29:3,21 43:25 49:13	160:19 167:24
brilliant (1) 89:10		187:21 191:19 194:15	classify (1) 126:10	35:24 36:15 39:4,5 40:6	57:17,24 58:1 169:2	counsel (3) 3:4 4:16 199:5
brilliantly (1) 84:4		certification (2) 27:5 164:10	clear (27) 8:21 22:17 24:25	comments (2) 132:25	consult (1) 118:18	countdown (2) 61:5,8
bring (2) 3:13 4:9		certifier (1) 29:15	45:4,13 55:24 57:4 59:4,15	134:1	consultancy (5) 96:17 98:1,6	counteract (1) 101:12
bringing (3) 23:15 27:8		certifying (1) 29:11	68:21 80:19 81:19 84:8	commissioning (2) 21:4 94:2	99:7 116:11	couple (1) 20:7
140:24		cetera (10) 11:23 12:14,18	117:25 122:21 127:17	committee (1) 42:8	consultant (1) 98:19	course (18) 3:6 4:25
british (8) 22:22 33:8,12,18		13:1 61:9 66:14,14 174:8,8	137:25 138:8 139:8 160:17	common (5) 60:22,24 68:15	118:2,5 121:13 123:3	8:10,16,18,21 10:14,19
41:24 42:3,7,14		189:7	175:14 181:19 183:4 188:7	162:20 177:4	11:1 58:9 83:24 122:6	123:8 130:21 157:25
broad (1) 92:14		chain (1) 155:21	192:8 194:11,19	communicate (2) 66:8 129:2	165:5,9 185:16	courses (2) 9:18 10:16
broke (1) 86:8		chairman (11) 4:17 46:19	clearly (9) 5:7 25:2 37:25	communicated (1) 128:19	counsel (3) 3:4 4:16 199:5	cover (1) 185:21
broken (2) 15:3 113:24		52:8 53:7 106:5,10 107:11	60:11 142:2 143:8 148:14	communication (2) 131:3,19	countdown (2) 61:5,8	covered (5) 69:2 92:24 93:13
brought (3) 28:10 123:16		153:15 163:12 197:20,25	152:11 183:25	company (2) 36:3 145:21	191:10 197:2	191:10 197:2
180:8		chance (1) 21:19	cleverest (1) 197:14	comparing (1) 55:2	covering (1) 186:16	covid (1) 54:14
brufma (3) 42:6,13,15		change (10) 6:11 18:20	client (41) 25:2 29:11,14,23	comparison (3) 56:6 98:5	covid (1) 54:14	cracked (1) 136:19
bs (44) 13:24 14:3 17:25		19:5,9 30:1 100:8 115:6,25	35:3,8 46:2 48:9 50:7 55:9	124:14	cracking (1) 101:13	crackling (1) 101:13
22:23		161:14 162:5	57:11 66:10,11 78:2 86:20	compartment (3) 15:25	crib (1) 124:12	criteria (22) 32:9 36:25
30:14,16,16,16,17,21 32:9		changed (5) 17:9 94:8 132:1	87:14 89:18 91:2,12 92:18	16:1,8	critic (1) 185:21	37:16 38:17 39:9 40:1
33:3,4,17 34:6,23		159:5 161:18	98:10 115:22 116:25	competent (1) 12:15	covered (5) 69:2 92:24 93:13	191:10 197:2
37:6,10,11,17 38:6 39:1,9		179:14,16,17 196:24	117:13 129:2 149:24	compile (3) 60:20 74:13 77:2	191:10 197:2	191:10 197:2
40:1,24 41:9 43:4,21		cheat (1) 107:25	152:19,22,23 156:5	compiled (1) 60:21	covering (1) 186:16	covid (1) 54:14
45:4,14 64:11 65:2		check (11) 1:17 49:8 84:15	159:16,20,24 161:7,9	complete (5) 10:3 56:25	cracked (1) 136:19	cracking (1) 101:13
71:9,17,21 72:7 82:8,11,23		106:9 115:25 152:2 156:9	163:5 171:16 180:6 187:2	97:15 124:13 151:9	crib (1) 124:12	criteria (22) 32:9 36:25
122:25 134:16,16 135:22		157:16 164:5 178:10	193:20 195:22	completed (6) 58:5 82:4	critic (1) 185:21	37:16 38:17 39:9 40:1
193:14		194:12	clientfacing (1) 115:20	156:13,19 173:11 188:19	covered (5) 69:2 92:24 93:13	191:10 197:2
bs8414 (1) 60:2		checked (7) 6:23 8:18 55:10	clientproject (2) 47:25 48:1	completely (1) 4:1	191:10 197:2	191:10 197:2
bs84141 (1) 30:20		75:11 165:10 166:25,25	clients (11) 12:8 44:14	completing (1) 59:10	191:10 197:2	191:10 197:2
bsc (1) 9:9		checking (5) 12:14 35:22	45:18,21 57:15 86:24	completion (1) 9:25	191:10 197:2	191:10 197:2
bsi (3) 35:22 42:3,4		162:18,18 179:12	108:20 109:7 130:12	compliance (11) 37:1,8,16	191:10 197:2	191:10 197:2
build (5) 64:19 65:12 68:24		checklist (5) 59:11 60:5	152:15 193:20	38:5 39:3,11 40:3 41:20	191:10 197:2	191:10 197:2
70:11 71:5		63:15 156:4,12	clipboards (1) 179:12	63:22,22 68:25	191:10 197:2	191:10 197:2
building (13) 15:14 16:2,4		179:14,16,17 196:24	clock (1) 61:8	compliant (1) 35:12	191:10 197:2	191:10 197:2
20:13,14 35:12 38:23		cheat (1) 107:25	close (3) 29:15 50:9 184:16	complied (1) 71:1	191:10 197:2	191:10 197:2
45:15 72:13 158:8,10,10		check (11) 1:17 49:8 84:15	closed (1) 73:18	complies (1) 69:19	191:10 197:2	191:10 197:2
185:14		106:9 115:25 152:2 156:9	closely (2) 13:23 14:2	comply (1) 69:11	191:10 197:2	191:10 197:2
buildings (2) 13:12 37:21		157:16 164:5 178:10	closeup (1) 183:9	component (14) 46:13 50:18	191:10 197:2	191:10 197:2
buildup (4) 100:13 179:2,18		194:12	coauthored (1) 42:21	51:20 94:16 113:24 156:9	191:10 197:2	191:10 197:2
185:11		checked (7) 6:23 8:18 55:10	coherent (1) 85:15	157:16,21 163:16,19 164:5	191:10 197:2	191:10 197:2
built (9) 16:8 20:3 36:7		75:11 165:10 166:25,25	coin (1) 107:24	165:21 171:17 172:6	191:10 197:2	191:10 197:2
69:3,8 71:19 72:21,24		checking (5) 12:14 35:22	collapsed (3) 86:14 93:1,6	components (14) 43:17,19	191:10 197:2	191:10 197:2
179:7		162:18,18 179:12	colleague (7) 48:18 64:8	49:12 50:14 57:25	191:10 197:2	191:10 197:2
burn (11) 11:12 12:3		checklist (5) 59:11 60:5	141:15,16 147:14 148:24	58:16,20 73:8 164:25	191:10 197:2	191:10 197:2
13:6,8,16 50:5,18 51:2,15		63:15 156:4,12	186:12	165:23 166:9 168:4,13	191:10 197:2	191:10 197:2
77:13 89:6 90:19 101:25		checks (8) 164:18,21,23	colleagues (2) 38:14 141:13	192:1	191:10 197:2	191:10 197:2
150:6,19 179:11,17 180:12		165:19 166:16 167:5,13	collect (1) 59:6	composition (3) 151:14	191:10 197:2	191:10 197:2
186:15		187:19	collected (1) 150:13	162:2,9	191:10 197:2	191:10 197:2
burned (3) 80:13 90:17,18		chemistry (1) 9:10	collection (2) 58:16 181:1	comprised (2) 147:2 195:10	191:10 197:2	191:10 197:2
burnhall (1) 65:16		chip (1) 36:3	colour (3) 191:11 192:8	concede (1) 96:5	191:10 197:2	191:10 197:2
burning (6) 86:11		choose (1) 33:23	195:21	concern (4) 26:5 45:12	191:10 197:2	191:10 197:2
89:11,11,11 100:12 123:3		chooses (1) 99:7	coloured (3) 192:11 193:9	171:13 193:7	191:10 197:2	191:10 197:2
business (3) 36:19 101:20		chose (2) 99:3 167:16	197:15	concerned (2) 45:11 190:13	191:10 197:2	191:10 197:2
104:9		ciara (2) 18:12,17	colouring (2) 181:18,19	concerns (1) 17:5	191:10 197:2	191:10 197:2
busy (1) 23:13		circles (1) 161:2	colours (3) 181:21 192:25	conclude (1) 29:13	191:10 197:2	191:10 197:2
bye (1) 198:17		circumstances (2) 53:12	193:1	conclusion (1) 18:3	191:10 197:2	191:10 197:2

<p><b>date (18)</b> 5:21 16:16 31:21 38:10 60:16 64:25 65:13,17,24 70:1 119:24 139:24 141:23 142:11 143:8 145:18 156:17 186:17 <b>dated (4)</b> 5:14 144:24 146:19 176:18 <b>dates (2)</b> 67:4 155:19 <b>datewise (1)</b> 67:7 <b>day (2)</b> 18:12,17 <b>day (35)</b> 6:15 8:12 13:18 20:19 24:9,18 45:11,11 56:24,24 59:22 64:1,2,23 65:13 69:23 77:15 80:1 97:5 114:19 115:1,21 117:9 123:18 130:4,9,10 132:6 162:11 169:14 171:25 173:4 180:12,15 198:4 <b>day70732 (1)</b> 105:25 <b>day71139614 (1)</b> 184:6 <b>day71732 (1)</b> 107:13 <b>day71781015 (1)</b> 146:13 <b>day74143 (1)</b> 146:13 <b>day74144 (1)</b> 146:14 <b>day74146715 (1)</b> 13:5 <b>day7550814 (1)</b> 179:1 <b>day95267 (1)</b> 53:10 <b>days (8)</b> 40:23 124:6 132:5 169:1 185:23,24 186:3 187:23 <b>daytoday (1)</b> 49:2 <b>dclg (1)</b> 40:22 <b>deal (3)</b> 3:10 73:5 96:4 <b>dealing (1)</b> 21:25 <b>dealings (1)</b> 63:3 <b>dear (1)</b> 134:9 <b>debbie (2)</b> 40:13 44:20 <b>debrief (1)</b> 97:17 <b>dec (1)</b> 65:23 <b>decade (1)</b> 13:21 <b>deceive (1)</b> 151:16 <b>deceit (5)</b> 6:1 19:10,18 66:23 <b>decide (3)</b> 49:23 93:20 128:10 <b>decided (8)</b> 25:21 26:6 38:22 49:19 53:14 80:1 94:18 132:16 <b>deciding (1)</b> 128:23 <b>decipher (1)</b> 70:5 <b>decision (27)</b> 38:1 80:20,22 81:2,5,10 99:5,5,6 125:9,24 126:1,3,6,9 127:1 128:7,8,8,10,12,25 129:13,21 130:14,15 131:6 <b>decorative (11)</b> 31:17 73:21 80:12 94:7 132:1 157:23 165:3 169:23 170:6,17 171:10 <b>dedicated (1)</b> 12:20 <b>deemed (1)</b> 96:17 <b>defend (1)</b> 99:1 <b>define (1)</b> 179:4 <b>defined (1)</b> 59:19 <b>definite (2)</b> 120:22,23 <b>definitely (9)</b> 11:4 44:23 102:6,7 104:16 108:17 120:5 183:24 195:7 <b>definition (2)</b> 121:13 122:21 <b>definitive (1)</b> 162:24 <b>definitively (2)</b> 40:5 162:14 <b>deflect (1)</b> 196:11 <b>deforming (1)</b> 94:22 <b>degree (9)</b> 24:12 91:24 92:17 152:24 179:6,9,18,21 187:21 <b>degrees (3)</b> 119:22 121:19 122:2 <b>delay (1)</b> 133:22 <b>delays (2)</b> 20:7 23:18 <b>deliberate (1)</b> 93:11 <b>deliver (3)</b> 149:23 153:5 180:7 <b>delivered (15)</b> 50:9 55:3</p>	<p>57:12 139:1,16 140:25 142:1,12,22 146:11 148:8,11,22 149:17 152:3 <b>deliveries (4)</b> 140:6,16 143:12,23 <b>delivering (2)</b> 20:4 180:6 <b>delivery (43)</b> 7:16 12:19 48:2 57:7,13 138:19 139:5 141:7,20 142:5,11,15 143:20 144:4,7,15,17,24 145:16 146:4,6,8,15,17 147:6,8,10,17,21,23 148:12,18,23 149:2,4,14 150:9,11 153:9 162:18 194:5,19,24 <b>demands (1)</b> 32:11 <b>demonstration (1)</b> 37:21 <b>deny (6)</b> 109:16 136:5,6 137:9,21,23 <b>denying (1)</b> 138:11 <b>department (1)</b> 40:22 <b>depended (1)</b> 56:14 <b>depending (1)</b> 119:23 <b>depends (3)</b> 47:9 48:5 179:4 <b>depletion (1)</b> 16:11 <b>deputise (1)</b> 186:13 <b>deputised (1)</b> 185:13 <b>deputising (6)</b> 158:1 169:4 171:23 185:19 186:19,22 <b>deputy (5)</b> 17:10 33:1 41:2 196:3,25 <b>describe (6)</b> 12:2 41:9 59:12 131:22 165:22 166:15 <b>described (3)</b> 10:22 11:1 134:12 <b>description (4)</b> 60:8 142:24 167:1 191:5 <b>descriptions (1)</b> 51:23 <b>design (3)</b> 9:20 10:1 72:12 <b>designated (1)</b> 59:17 <b>designed (3)</b> 35:19 44:22 67:23 <b>designer (2)</b> 11:24 68:18 <b>designers (1)</b> 72:12 <b>designs (1)</b> 68:18 <b>desk (1)</b> 56:24 <b>destined (3)</b> 150:4,17,23 <b>destroying (1)</b> 183:10 <b>detail (1)</b> 161:18 <b>detailed (2)</b> 157:1 166:7 <b>detailing (1)</b> 57:16 <b>details (6)</b> 51:20 82:16 108:1 131:20 139:6 165:25 <b>determine (4)</b> 15:23 16:12 128:9 162:14 <b>develop (2)</b> 23:19 30:16 <b>developed (1)</b> 32:10 <b>developing (1)</b> 92:3 <b>development (7)</b> 22:16,16 23:11,15,18 78:20 79:5 <b>deviation (1)</b> 45:15 <b>device (1)</b> 2:20 <b>dial (1)</b> 119:25 <b>diary (3)</b> 8:14,17 119:25 <b>dictated (1)</b> 75:10 <b>didn't (69)</b> 10:3 11:5 13:9 21:19 31:21 32:18 33:23 50:22,23 54:15,19 70:23 72:22 75:15 77:4,7 86:24 93:7 94:25 97:5,6 102:16,20 108:17,22 116:22 117:4,16 122:22,23 125:23 126:16 129:6,19 130:11 135:17 137:19 144:21 151:10 152:11 156:16 157:3 160:8 162:11 164:12 167:5 169:7 170:18 177:25 178:11 180:17,20 181:6 184:16 185:2 188:21,24 190:12,21,23 192:22 193:11 194:19 195:8,20,23,25,25 196:3 <b>differ (2)</b> 99:8 139:12 <b>difference (16)</b> 100:8 102:19,22 119:20 121:10 138:9 159:4 174:19 177:9</p>	<p>192:22 194:11 195:3,13,14,16,22 <b>differences (5)</b> 139:13 192:10 193:7,18,19 <b>different (21)</b> 5:2 15:15 30:1 40:19 43:18 66:16 71:9 86:18 100:5 149:8 158:15 159:21 161:5,6 183:18,21 192:11 193:8 194:1 197:4,15 <b>differentiate (1)</b> 193:5 <b>difficult (3)</b> 23:12 87:8 194:21 <b>difficulty (2)</b> 4:24 113:2 <b>dimensions (1)</b> 68:7 <b>diploma (3)</b> 9:17,24 10:3 <b>direct (3)</b> 19:23 86:24 135:24 <b>direction (3)</b> 21:24 129:20 155:6 <b>directives (1)</b> 11:19 <b>directly (21)</b> 12:23 13:2 18:2 21:25 22:5 28:25 29:4,8 37:4 43:6 46:3 59:8 63:8 66:12 87:19 110:13 129:2 150:19 157:15 160:4 166:20 <b>director (2)</b> 27:15 28:12 <b>disappears (1)</b> 89:7 <b>disclosed (4)</b> 54:11 69:24 77:5 110:24 <b>disclosure (2)</b> 144:19 156:21 <b>discovered (1)</b> 54:20 <b>discuss (5)</b> 3:24 119:25 122:20 127:14 135:24 <b>discussed (7)</b> 9:2 66:25 67:6,8 130:8,10 146:2 <b>discussion (12)</b> 67:9,13 97:16 101:9 126:18 127:4,15 132:7 134:10 137:3 192:4,21 <b>discussions (11)</b> 41:19 54:4 93:22 97:21 131:10,16,22,25 136:13 191:24 192:5 <b>displayed (1)</b> 53:11 <b>disposing (1)</b> 12:17 <b>distinct (1)</b> 15:3 <b>distinction (2)</b> 60:12 100:11 <b>distinctive (1)</b> 181:20 <b>distorted (5)</b> 81:25 86:8 87:21,23 99:22 <b>distracted (1)</b> 149:22 <b>dividend (1)</b> 36:10 <b>document (52)</b> 17:13 28:6 31:5,5,7 36:24 37:1,8,12 39:10 40:2 55:17 60:1,16,20,21 61:1,11,17 75:3 77:16 84:5 112:7,19 113:15 114:14,18,25 115:17 116:5,14,22 117:5,9 118:2,16,23,24 134:21 141:7,11 145:18 147:25 148:7 149:22 155:16,17 156:17 157:2 159:19 176:14 189:13 <b>documentary (1)</b> 150:24 <b>documented (4)</b> 132:7 148:15 150:4,17 <b>documents (18)</b> 2:14 54:4 58:22 75:5,16 76:1,5,9,17,18 77:1 110:24 111:3 139:19 147:1 173:21 174:24 176:9 <b>does (21)</b> 15:13,13 27:12,15 35:8,20 40:16 60:16 119:3 135:16,17 138:3 145:15 151:4,12 164:8,9 168:14,15,16,17 <b>doesn't (15)</b> 92:18,19 116:25 120:8,16 122:4 145:12 147:17 155:19 161:2 172:11 188:13 197:13,19,24 <b>doing (15)</b> 23:23 26:11 32:1 34:3 35:9,25 41:3,5 48:20 53:20 69:17 78:23 79:9</p>	<p>133:15 152:25 <b>domain (1)</b> 123:10 <b>done (40)</b> 4:6 17:8,11 18:22 34:9 43:10 45:9 48:9 49:17,21 54:7 57:21 63:15 68:23 72:25 78:15 79:2 91:11 98:15 104:21 105:21 110:12 116:17 118:19,20 127:8,9 132:24 147:2 157:5 158:1 160:11 171:1 180:5 185:1,4,7,8 186:8 197:1 <b>dont (122)</b> 2:19 3:5,24 5:8,9 6:15 7:12 20:24 23:5 24:23 26:1 28:22 29:7 32:17 33:24 35:13 36:1 37:13 40:19 42:10 43:1 46:5 47:12,13,13,24 51:8 52:3 53:10 57:21 68:24 69:15,15 71:12 72:3 75:2 76:8 78:22 86:6,21 87:5,25 88:6,13 90:19,20,25 91:19 92:8 95:20 97:6,25 98:2,14,23 99:8,20 100:6,15,17,22,23 102:5,5,6,25 103:1,2,15 104:13,16 105:9 107:24 108:16,18 109:6,9,13 116:25 117:1 121:4 123:12 124:20 126:12 129:17,22 132:17 133:12 134:22 136:2,3,5,6,6,25 137:10,11 141:2 144:16 147:23 148:24 149:2,14 156:14 169:17 170:18,23 171:11 176:6,9 177:3 178:10 181:9,9,24 184:18 188:20 189:12,18 190:5,25 194:10 <b>door (3)</b> 21:18 25:17 151:11 <b>doubt (10)</b> 27:22 46:16 74:4 95:23 108:3 120:23 122:11,17 128:17 186:5 <b>down (37)</b> 5:7 8:20 15:3 43:13,13 46:5 50:12,13 61:2,10 64:14 65:6 70:23 71:12 74:15 77:16 80:15 81:9 82:20 84:10 17 86:13 95:2 99:14 113:24 115:2 120:17 130:1,4 139:21 156:6,8,9 173:7 182:18 183:20 188:12 <b>dr (7)</b> 40:12,13,14 54:11 113:10 114:15 115:19 <b>draft (6)</b> 58:6 69:10 162:25 171:4 172:14 182:11 <b>drafted (2)</b> 58:22 97:4 <b>drafting (1)</b> 55:11 <b>draw (2)</b> 42:1 87:8 <b>drawing (11)</b> 56:7 68:10 70:13 71:13,18 74:17,17,22 75:12 160:20 161:17 <b>drawings (35)</b> 55:2,7,8,9 56:18 57:5 66:25 67:9,10,11,19,25 68:16 74:24 158:6,12,18,22 159:6,11,25 160:2,5,9,12,16,24 161:1,9,20,22 163:8,9,13,14 <b>drawn (3)</b> 71:13,14 196:15 <b>drew (1)</b> 42:8 <b>drill (2)</b> 70:23 72:1 <b>drilling (1)</b> 70:20 <b>drive (3)</b> 88:10 92:7 194:3 <b>drivel (1)</b> 88:7 <b>driven (4)</b> 32:13,15 40:11 94:15 <b>driver (4)</b> 40:14 148:17,19 151:3 <b>drivers (1)</b> 149:23 <b>drives (2)</b> 57:23 92:8 <b>driving (1)</b> 36:8 <b>dropped (1)</b> 81:22 <b>dual (1)</b> 48:21 <b>due (3)</b> 20:7 80:11,18</p>	<p><b>duration (5)</b> 119:19 120:6 121:8 128:2 129:7 <b>during (21)</b> 3:16,17 8:10 13:23 15:19 20:25 52:13,17 55:22,23 59:18 62:5 83:9 87:15 97:14 112:4 115:16 164:19 165:5 167:14 197:12 <b>dynamics (3)</b> 9:20,22 197:15 <b>E</b> <b>earlier (13)</b> 67:12 68:17 76:6,15 104:20 130:1,3,9,10 131:5 155:11 187:1 197:18 <b>early (15)</b> 16:18 33:20 46:23 65:23 72:24 73:6 79:8 123:9 125:5 126:23 130:13 133:6 140:17 153:20,23 <b>easiest (1)</b> 126:24 <b>easily (2)</b> 170:24 189:7 <b>edge (4)</b> 183:9 188:1,2 189:4 <b>edition (6)</b> 37:2 42:21,23 43:7,9 45:4 <b>educated (1)</b> 99:8 <b>educating (1)</b> 87:14 <b>effect (1)</b> 195:15 <b>effective (3)</b> 81:16,23 82:1 <b>effectively (1)</b> 98:1 <b>effort (2)</b> 40:10,18 <b>eight (1)</b> 16:15 <b>either (5)</b> 31:12 45:3 165:24 168:5 194:22 <b>electronic (5)</b> 2:20 56:12 174:7 182:6,18 <b>electronically (4)</b> 56:16 57:22 157:7 182:6 <b>element (3)</b> 152:25 192:23 195:10 <b>elements (1)</b> 172:6 <b>else (13)</b> 3:25 21:16 40:12 65:4 69:10 96:4 110:12 150:11 161:15 168:1 187:10 191:1 196:12 <b>email (50)</b> 3:5 64:8,9,14 65:6 66:3,7,13,17,19,21 67:7,15,18 68:5 77:11 79:14 113:9 114:15,16 119:12 123:6,8,13,21 124:5,7 126:18 127:4,13 128:12 129:17,23 130:6,11 131:3 133:1 135:12 136:1 139:20,21 140:13 144:3 145:19 146:7 155:21,23 158:16 160:4 163:1 <b>emails (2)</b> 63:7 163:14 <b>employed (4)</b> 26:19 28:9,15 40:21 <b>employee (2)</b> 75:23 93:23 <b>enable (4)</b> 126:1 134:4 135:9 166:3 <b>enabled (1)</b> 136:19 <b>encourage (1)</b> 91:24 <b>encyclopaedic (1)</b> 30:9 <b>end (13)</b> 9:24 36:10 61:21 85:18,20 91:8 101:8 117:3 127:13 130:21 134:3 140:1 197:23 <b>ending (1)</b> 77:15 <b>engineering (1)</b> 9:17 <b>england (1)</b> 30:5 <b>enough (10)</b> 29:7 45:4 103:1 150:22 172:14,17 177:10 185:24 190:22 197:14 <b>enquired (1)</b> 64:10 <b>enshrined (4)</b> 37:11 38:7 39:10 40:2 <b>ensure (2)</b> 58:19 185:24 <b>ensuring (5)</b> 47:15 48:22 150:2,15 155:12 <b>entirely (3)</b> 74:2 128:18 188:24 <b>entitled (2)</b> 60:1 155:18 <b>entry (2)</b> 99:14 145:6 <b>environment (1)</b> 36:7 <b>environmental (1)</b> 9:9</p>	<p><b>equipment (3)</b> 12:16 181:25 189:3 <b>erm (31)</b> 26:8 35:5 45:25 53:17 56:24 74:4 75:8 76:20 85:10 89:5,12 90:13 92:15 95:13 97:2 104:13 108:1 114:7 121:12 128:22 131:2 136:2,24 157:13 164:4 168:20 177:16,21 181:24 185:13 188:4 <b>err (3)</b> 78:17 79:3,6 <b>erroneous (1)</b> 17:14 <b>error (2)</b> 73:17 194:16 <b>errors (1)</b> 55:6 <b>essential (1)</b> 162:2 <b>essentially (7)</b> 61:22 67:20 70:24 71:1 87:22,24 157:9 <b>established (2)</b> 63:14 138:10 <b>et (10)</b> 11:23 12:14,18 13:1 61:9 66:14,14 174:8,8 189:7 <b>etc (3)</b> 140:7,19,22 <b>eternit (7)</b> 7:20 73:21 81:14 101:13,14 102:1,12 103:1,8,18,23 105:11,17 176:23 190:19 194:8 195:12 <b>euroform (6)</b> 7:17 144:24 146:23 147:10 148:14 153:4 <b>european (1)</b> 22:25 <b>evens (11)</b> 6:8,15,17,21,22,24,24 7:1,3,6 160:5 <b>even (20)</b> 19:15 32:16 36:3 39:20 43:7 45:2 67:25 96:23 102:25 104:17,23 115:18 122:22,23 123:4 126:16 132:16 134:22 159:18 161:18 <b>ever (24)</b> 36:1 41:4 46:1,5,8 62:5,17,23 63:3,10 78:15 91:3 92:6 108:19 117:13 126:15 137:9,10 138:6 148:21 152:7 160:2 170:19 183:5 <b>every (20)</b> 35:20 50:18 51:1 90:5 98:16 115:25 123:19 125:19 150:2,15,22 152:24 156:14,17 179:5,5,6 187:14,17 189:16 <b>everybody (2)</b> 55:16 72:11 <b>everybodies (1)</b> 78:24 <b>everyone (4)</b> 1:3 52:25 107:3 154:8 <b>everything (7)</b> 75:19 78:24 81:7 115:2 153:1 161:15 168:1 <b>evidence (48)</b> 1:16 2:9,11 3:1,24,25 4:22 5:7 6:22 9:2 13:4 14:11 25:16 26:15 52:17 53:1,23 57:3,24 102:16 105:25 106:17 107:4,16 108:7 109:10,12 110:25 123:9,17 137:25 138:1 146:12 147:13 154:1,9 155:3,11 157:21 160:18 165:7 166:16 168:24 175:18,19 179:10 182:10 198:10 <b>evolution (1)</b> 37:24 <b>exact (1)</b> 161:13 <b>exactly (16)</b> 16:5 17:19 33:16 45:14 54:23 70:19 74:8 113:4 118:21 124:2 133:12 161:16 162:2 173:16 177:18 179:19 <b>examination (2)</b> 51:21 163:3 <b>examine (2)</b> 36:15 131:10 <b>examining (1)</b> 27:13 <b>example (15)</b> 17:13 22:23 29:19 42:3 56:15 68:20 70:25 71:12 108:9 115:7 166:1,8 171:18 187:3 188:6 <b>examples (1)</b> 174:12</p>	<p><b>exams (1)</b> 9:21 <b>exceed (1)</b> 122:2 <b>exceeding (2)</b> 119:22 121:19 <b>except (2)</b> 143:12 161:14 <b>excessive (1)</b> 80:11 <b>exchange (2)</b> 53:10 100:9 <b>exchanges (2)</b> 73:6 82:16 <b>excludes (1)</b> 139:2 <b>excluding (2)</b> 134:13,18 <b>excuse (2)</b> 54:14 161:17 <b>exercise (2)</b> 60:16,18 <b>exhibit (1)</b> 94:11 <b>exhibited (1)</b> 60:2 <b>exist (1)</b> 37:8 <b>exova (2)</b> 19:2,10 <b>expand (1)</b> 10:21 <b>expanded (2)</b> 31:13 142:5 <b>expect (6)</b> 3:5 11:22 67:14 96:21 172:4,18 <b>expected (6)</b> 3:4 79:6 162:7 167:21 171:22 175:19 <b>expecting (2)</b> 66:14 140:5 <b>expenses (1)</b> 134:13 <b>expensive (1)</b> 35:14 <b>experience (11)</b> 26:3 79:8 89:17 90:3,23 91:14,25 98:3,5,14,21 <b>expert (3)</b> 122:6,14,15 <b>expertise (2)</b> 90:4 91:14 <b>experts (1)</b> 122:16 <b>explain (21)</b> 3:15 44:4,12 75:15 90:10 110:1 116:22 123:14 133:23 147:8 148:12 152:15 153:2 167:5,17,24 168:1 174:8 179:25 182:14 184:8 <b>explained (5)</b> 44:9 45:18 95:8 96:16 117:10 <b>explanation (2)</b> 125:12 192:15 <b>explore (3)</b> 92:10 113:5 185:9 <b>explosion (3)</b> 9:17,18,23 <b>expose (1)</b> 197:12 <b>exposed (2)</b> 81:17 85:9 <b>expressed (1)</b> 108:2 <b>ext1 (1)</b> 119:8 <b>extend (2)</b> 120:6 123:4 <b>extending (2)</b> 119:18 121:7 <b>extent (16)</b> 10:9,13 22:6 27:8 39:12 45:5 56:7 71:4 72:17 87:21 91:5 92:4,10 97:17 102:25 180:5 <b>external (18)</b> 17:6 31:11,19 62:22,23 63:3,11 81:14 116:10 161:15 165:2 167:25 169:22 170:5,16 171:9 183:1 191:17 <b>extinguished (1)</b> 124:12 <b>extra (2)</b> 17:18 134:4 <b>extract (1)</b> 21:10</p>			
					<b>F</b>				
					<p><b>f (1)</b> 96:18 <b>faade (6)</b> 100:12 187:9,11 188:24 </p>				

<p>failure (9) 84:21,25 85:1 86:19 91:24 94:21 98:4,18 194:3 fair (6) 10:25 13:16 32:24 41:8,13,17 fairly (1) 79:23 fall (3) 96:18 197:12,16 fallen (3) 81:17 86:14 136:19 falling (3) 94:17,23 100:14 falls (1) 86:13 falsification (3) 26:12 53:21 54:20 familiar (5) 14:7 47:6 60:3 103:10,11 family (1) 10:10 far (22) 22:4 23:3 47:11 62:7 65:3,4 76:3 84:16 110:3 131:16 139:11 144:19 147:1,15 160:18 163:20,21,23 167:23 168:1 175:22 194:25 fast (1) 25:17 fault (1) 21:7 faultry (1) 102:14 feather (1) 105:6 feathering (2) 108:25 109:2 february (36) 1:1 64:3 73:1,2 82:9,18 83:2 95:6 96:16 109:19 113:10,16 114:6,16 119:13 120:3 124:6,7 125:17 126:4 130:22 131:18,24 132:14,23 133:2 136:18 139:13 141:8 146:20 147:3 158:13 159:21 176:24 177:14 198:20 feel (4) 5:3 19:6 26:7 53:16 feeling (5) 26:16 39:20 53:24 54:2,5 feet (1) 34:17 fell (1) 125:10 fellow (1) 1:4 felt (1) 26:4 few (2) 2:8 172:2 fgf (6) 7:18,19 139:5 142:6 143:16 144:14 fibre (8) 31:12,13 73:18,19 105:12,14,17,18 fighting (2) 78:1,3 figure (3) 23:24 191:15,18 fig (59) 55:8 56:10,19 57:4,18 58:1,6,10,25 76:9,13 147:9 148:15 155:18 156:19 164:23 165:1,10,11,12 166:10,11,11,14,17 167:2,6,15,20,22 168:11,18 169:10,21 170:5,7,16,25 171:2,9 172:5,8,10,12 173:23,24 174:5,7,9,22 178:15 182:2,4,15,23 183:2 190:4 194:22,25 filed (2) 182:1,14 files (5) 56:23 110:23 116:16 174:11 182:19 filing (1) 57:22 filled (1) 61:19 filling (2) 61:23 88:10 final (7) 18:6 55:5 56:5 86:3 157:23 161:22 171:12 finally (1) 2:18 financial (1) 34:10 find (11) 21:21 66:25 67:8 113:12 135:21 156:19 167:21,22 175:19,20,22 findings (1) 32:6 fine (9) 4:10 18:16 109:11 144:11 145:11 153:25 160:10 197:22 198:5 finetooth (4) 179:2,4,7,22 finish (4) 21:7 31:17 46:19 153:16 finished (5) 4:2 72:25 171:18 187:9,11 finishing (1) 140:10</p>	<p>fire (87) 9:17,19,19,20,22,22 10:1 11:3 14:19,23 15:1,2,3,4,5,10,13,15,19,24,25 23:3,8 24:3 26:3 27:9,9,14 28:8,10,14,17 30:2,6,19 31:24 32:12,16 34:2 37:22 39:15,18 62:13 73:18,20 78:1,3 80:19,20 81:19 83:12 94:15,17 95:7 96:2 136:16,19,20 163:4 182:17 192:11 193:8,19,22 195:23 fired (1) 87:4 fireline (1) 73:12 fires (1) 17:12 first (54) 2:10 5:17 8:9,16,18,21 11:7,8 42:5 57:5 58:4,6 64:15 65:1 66:9,10 69:25 78:15 79:4 84:18 91:3,7,10,18 119:22 121:20 122:2,23,24 123:6,14 129:6 143:14 146:25 154:23 157:25 159:2,12 165:5,8 170:4 171:2,4 172:8 176:11 178:9 182:11,13 183:4 184:23 187:24 189:1 190:4 193:23 firsthand (1) 87:7 firstmover (1) 33:17 firsttime (1) 78:25 fit (3) 54:15 67:24 68:2 fitted (1) 68:19 five (1) 160:12 fixed (5) 31:14 64:19 73:12,21,22 fixings (1) 48:25 flame (3) 85:11 89:5 100:12 flames (1) 124:13 flaming (1) 80:12 flintshire (1) 20:16 floor (1) 189:2 fluid (1) 79:23 flush (1) 188:25 flood (7) 59:24 69:21 117:13 156:16,18 157:10 168:17 followed (5) 47:16 131:17 155:13 159:19 167:3 following (12) 3:1 54:2 73:11 101:8 108:8 110:4,22 123:17 131:24 132:3 136:13 164:16 follows (1) 131:15 foolish (1) 118:15 footage (2) 6:10 83:6 force (1) 11:25 forget (2) 4:3 57:21 forgive (2) 28:16 161:24 forgot (1) 88:8 forgotten (1) 49:21 forklift (2) 12:23 148:21 form (13) 28:18 31:4 43:24 91:19 112:6 115:21 124:24 147:14 148:1 149:2,3 150:24 176:15 forma (1) 155:15 formal (7) 23:21 39:2 63:18 110:3,5,7 112:2 formalise (1) 60:22 formalised (1) 60:24 format (1) 59:5 formed (2) 30:19 182:23 former (1) 25:2 forum (1) 44:24 forward (7) 28:14 125:3 130:5 135:24 142:14 156:15 198:14 forwarding (1) 64:9 found (2) 28:25 79:10 four (4) 50:5,6 156:9 160:11 fourth (1) 43:13 fr5000 (1) 142:17</p>	<p>fr5001 (1) 142:19 fr5100 (2) 142:20 143:3 frame (7) 65:15 73:13,15 134:16 140:19,24 171:19 frequently (1) 93:9 fresh (1) 113:2 friday (2) 113:13 140:20 front (11) 1:24 2:5 5:16 16:3 50:8 73:14 115:10 149:8 167:15 194:20 197:11 full (16) 23:1 38:6 45:5 77:23 78:11 82:16 119:19 121:8 124:19,21 125:23 128:2 129:7 131:20 165:12 166:14 fullscale (1) 91:3 fulltime (1) 14:20 fully (7) 14:13 43:25 45:23 46:13 47:6 124:23 169:14 function (1) 190:24 further (10) 61:2,10 82:20 93:21,23 132:1,18,22 140:11 158:17 furthest (1) 119:8</p> <hr/> <p>G</p> <p>gain (1) 35:24 gained (2) 81:8,13 gamut (1) 23:1 gap (4) 44:15 69:16 87:3 179:5 garnock (2) 31:23 32:16 gate (1) 150:6 gave (11) 6:22 16:13 21:23 33:8 37:20 87:3 92:11 115:17 116:5 117:8 172:1 gene (2) 22:6,6 general (17) 13:7 15:21 29:13 60:8 62:3 83:1,4 90:3 91:2 98:4,5,9 166:24 167:4 175:7 178:24 179:6 generalised (1) 167:11 generally (9) 13:12 14:13 17:4 29:2 31:14 45:12,17 117:16 118:22 gentleman (4) 19:23 21:25 49:21 100:21 gentlemans (2) 6:16 27:23 gentlemen (1) 6:13 genuine (2) 26:7 53:16 get (50) 5:7 23:12,19 25:24 26:6 32:5,6 36:9 37:20 39:22 46:19 48:9 50:11 53:14 57:9,12 65:13 67:1 68:17 72:5 76:24 77:1 81:1,2,3 88:7 89:23 90:17 91:13 98:7,13,14 106:13 126:15 133:19 135:5 136:7 150:8 151:5 152:16 161:22 166:1 179:6 180:9 187:2 189:4 191:2,6,9 196:16 gets (1) 64:21 getting (5) 12:17 20:6 40:24 63:18 186:15 giesler (2) 27:24 28:2 gilbert (1) 22:5 gist (5) 90:5 104:17 118:22 122:8,14 give (18) 9:3 10:11 23:19 39:7 83:11 86:16 92:8,18 115:3 117:16 122:10,12,16 129:19 131:20 135:23 174:12 182:9 given (36) 11:15 16:23 30:3 33:12 38:5 44:18 46:9 50:16 55:23 65:22 82:22 25 92:12 94:5 96:20,25 97:13,23 105:11,16 111:1 114:19,25 116:13 117:2,4,14,24 125:5 159:21 161:6,6 165:13 182:20,23 187:16 gives (1) 92:19 giving (11) 2:11 3:23 4:22 88:1 90:2,14 91:21 98:3 118:21 126:25 172:3</p>	<p>glass (1) 89:24 global (1) 20:8 goal (1) 33:4 goes (6) 35:1 36:5 89:9 104:6 121:3 187:15 going (61) 1:16,17 9:3,7 13:6,14 20:10 23:23 24:5,10 26:2 27:19 28:14 29:6 30:1 33:10,16 34:16 36:7,9 42:20 46:17 63:7 68:2,25 72:1,21 78:19 79:15,22 81:1,3 83:5,14 87:16 91:17 98:16 106:7 115:5 127:2 129:19 132:16 144:10 151:16 158:19 163:18 184:17 161:2,3 163:13 167:25 169:2,19 171:14,24 172:23 173:15,18 180:7,11 183:13 185:14 186:25 gone (5) 43:5 69:10 125:8 163:18 184:17 good (19) 1:3,6,7,23 4:6,13,17,17,19,20 19:5 30:4 96:4 104:24,24 106:19 150:22 153:17 198:3 goods (1) 146:10 goodsin (3) 12:20,22 150:18 gopro (2) 189:15 190:3 goto (1) 39:22 governing (1) 30:5 government (7) 32:11,14,16 38:2 39:13 40:22 41:11 governments (1) 39:17 graphs (1) 113:24 green (4) 147:14 148:1 149:2,3 grenfell (5) 17:21 27:14 28:8,17 34:2 grew (2) 10:9,12 grey (2) 188:2,14 ground (2) 184:12,12 grounds (2) 80:18,23 group (2) 13:11 31:22 growth (2) 16:12 80:19 guarantee (1) 79:3 guard (1) 151:10 guards (3) 150:5,25 152:16 guidance (9) 82:11,22,25 92:11,12,13,14,17 96:9 guide (1) 104:4 guys (3) 77:20 136:8 140:17</p> <hr/> <p>H</p> <p>habit (1) 153:15 hackitt (1) 27:17 hackitt (12) 8:12 20:2,5 38:21 126:3,6 128:14 132:16 158:24 177:5 178:7,11 half (1) 151:8 halfway (6) 10:14 43:13 65:6 84:10,17 187:6 hall (27) 11:12,20 12:3 13:2,6,8,14,16 50:5,18 51:2,15 67:13 77:13 101:25 130:4 148:22 150:6,8,12,19 153:10 177:2 179:11,17 180:12 186:15 hand (5) 41:11 64:20 74:16 102:20 140:4 handed (3) 48:7 54:18 118:16 handwriting (1) 61:20 handwritten (1) 141:12 happen (9) 16:22 27:19 48:17 50:1 58:3 100:4 102:17,20 134:4 happened (21) 23:25 25:17 26:10 28:11 53:19 63:19 87:15,18 90:11,15,24 115:15 117:22 133:13 138:11,14,15,16,17 157:24 169:17 happens (2) 87:15 90:4</p>	<p>happy (9) 23:20 68:13 92:8 99:8 127:13 134:3 139:25 140:1 185:18 hard (1) 56:12 hardy (1) 27:24 hasnt (1) 128:1 hat (1) 100:21 havent (9) 9:5 21:20 117:7 132:7 147:20 160:13 174:15 182:9 186:19 having (32) 8:24 34:17,23 38:13 41:23 46:5 63:17 72:25 79:2 93:1,6 95:21 96:23 101:21 110:23 115:10 125:15 126:13 129:13 135:25 137:9 138:7,10 139:15 157:1 165:1,10 168:24 169:21 192:3 193:23 194:20 hayes (8) 13:4 83:23 84:24 99:16,25 146:9,13 180:18 head (8) 5:9 8:15 22:3 83:6,9 88:3,12 103:16 headed (1) 113:25 headhunted (2) 19:13,14 health (7) 11:17,21,23 59:15 176:21,22 185:16 hear (12) 1:16,18,21 28:3 44:11 53:2,4 55:15 107:5,7 154:11,12 heard (5) 34:8 44:7 45:17 97:1 98:22 hearing (7) 1:4,10 3:1,6 53:1 123:14 198:19 hearth (2) 68:22 71:13 heat (6) 15:18 16:5,13,23 17:3 89:10 hed (1) 196:14 height (4) 68:12,21,25 184:16 held (1) 55:8 hello (1) 154:20 helmet (2) 99:4,10 help (10) 1:14 20:12 22:9 68:14 100:22 141:9 145:23 162:1 166:13 174:23 helping (1) 64:20 helps (1) 68:11 here (17) 1:4,21 7:24 9:4 22:8 28:11 67:14,20 72:23 90:6 99:1,23 134:7 138:2 146:7 154:12 167:1 heres (2) 117:20 129:18 hes (4) 120:9 123:4 137:13 138:5 hesitance (1) 33:1 he (3) 64:24 133:4 139:23 hide (2) 99:9 197:9 hiding (1) 45:19 hierarchy (1) 117:22 high (1) 188:20 highly (1) 96:19 highrise (1) 37:21 himself (3) 120:9 185:19 190:17 history (2) 39:13 78:16 hold (3) 57:9 67:1 191:3 holds (1) 23:17 holes (3) 70:20,23 72:1 holland (2) 18:12,17 hollywell (1) 20:16 honest (13) 28:22 31:25 32:17 45:6 74:4 75:12 93:14 98:21 118:15 132:9 170:23 186:11,18 honesty (1) 152:18 improve (8) 27:7,9,11 29:1,3 hope (5) 3:7 68:10 92:22 139:23 154:15 hoping (1) 145:23 inaudible (9) 18:14 84:20 86:13 89:12 99:18 100:25 180:24 187:22,24 include (4) 1:12 49:5 56:19 57:5 included (4) 9:18 124:11 174:9,11 includes (1) 156:5</p>	<p>126:19 127:5,15 128:6,10,23 129:2,17 131:7 133:3 134:25 135:13,18 155:6 158:5 185:20 186:12 howards (1) 125:25 however (2) 94:18 192:12 humphries (3) 19:24 21:15 25:8 hundred (1) 89:6 hypothesis (1) 34:22</p> <hr/> <p>I</p> <p>ian (1) 101:8 id (21) 6:13 7:7 19:5 21:17 34:8,19 41:4 45:17 46:8 54:7 62:9 67:4 72:20 75:18 81:6 92:4 97:8 100:3 104:21 121:12 125:3 idea (9) 22:9,21 23:7,14,18 24:19 35:11 137:15 149:20 identified (7) 7:25 18:5 46:14 60:7 145:1 165:23 168:4 identify (6) 70:7 109:25 131:19 165:21 170:24 193:11 identifying (2) 164:24 196:5 ifc (6) 113:10 114:15 116:11 117:24 118:14 136:14 ikon (1) 22:15 ill (13) 3:14 39:25 47:4 88:18 96:5 102:9 130:7 138:21,22 140:22 165:18 188:11 191:23 im (93) 1:4,17,21 4:5,10,24 7:5 9:7 18:10,24 22:4 24:15 27:4,6 30:1 34:22 36:9,11 39:24 41:5,5,5 46:17,19 62:7 63:1 65:3 75:3,22 76:22 78:8,10,18 81:21 84:6,16 89:19 90:20 92:8,10,12 95:23 98:13 99:1,8,11,17 100:1 103:17 105:7 106:5 107:18 111:18 112:11,17 117:16 120:23 124:17 127:2,2 132:21 137:17 140:15,16 147:15,22,25 148:7 149:10,12,19 153:15 154:12 163:24 167:23 168:1 169:15,16 172:23 173:18 175:22 176:8 177:4 180:21 183:17,18 186:3 194:15,25 196:21 197:13,14,21 image (3) 55:16 83:13 183:11 images (1) 190:2 immediately (5) 132:3,5,11 155:22 188:14 impact (3) 17:12 70:14 71:22 impacted (1) 195:6 impart (1) 70:16 impacting (5) 87:6 89:18,19 91:12 92:17 implement (1) 28:19 implementing (1) 28:7 implication (1) 133:7 implications (2) 135:3,7 important (6) 3:24 10:8 43:14 46:12 58:20 138:9 impossibility (1) 120:8 impossible (1) 10:10 impression (1) 72:5 improve (8) 27:7,9,11 29:1,3 32:12 87:17 157:5 inaccurate (2) 96:3,25 inaudible (9) 18:14 84:20 86:13 89:12 99:18 100:25 180:24 187:22,24 include (4) 1:12 49:5 56:19 57:5 included (4) 9:18 124:11 174:9,11 includes (1) 156:5</p>	<p>including (5) 4:1 94:7 134:12 146:23 191:15 incomplete (4) 76:5,7 96:3,25 incorporating (2) 82:9 108:12 incorrect (3) 29:1 143:13 177:23 increased (1) 68:12 incredible (1) 196:17 incumbent (1) 72:22 independent (2) 24:3,11 index (1) 199:1 indicate (2) 3:14,19 indicates (2) 164:23 186:20 indication (2) 116:8 173:5 indicative (1) 23:23 indistinct (1) 83:24 individual (4) 42:2 108:24 171:16 191:24 individually (2) 165:24 168:5 individuals (1) 131:20 induction (2) 176:15 177:6 industry (5) 23:12 29:3,16,21 43:25 ineffective (1) 72:2 info (2) 68:13 140:11 inform (1) 185:15 information (33) 26:10 39:18,20 48:24 50:12 53:20 59:21 67:2 68:11 74:10,23,25 75:4,16 78:4 87:7 89:25 92:17 100:16 103:18 104:2 109:7 110:22 111:1 118:21 126:1 129:15 162:24 172:1 173:21 174:24 178:2 193:21 inherent (3) 35:17 85:11 89:4 inherently (1) 33:13 inhouse (1) 23:19 initial (4) 15:25 30:19 71:13 74:22 initially (4) 61:20 75:10 133:14 156:15 initiative (1) 32:10 innovation (1) 22:3 input (1) 42:22 inq000141372 (3) 84:1,10 88:24 inq000141373 (3) 86:3 91:7 99:14 inquiry (28) 3:4 4:16,22 6:2,23 13:4 17:21 27:18 31:22 32:5,6 74:11,12 75:20 76:17,21 77:3,6 101:6 108:8 110:24 123:11 138:1 146:9 147:15 178:25 180:18 199:5 insist (1) 162:20 inspect (1) 188:19 inspection (1) 55:18 install (2) 139:25 140:8 installation (5) 73:15 94:9 164:19 167:14 191:25 installed (5) 46:11 49:1 164:25 166:5 168:9 installer (1) 148:19 installers (1) 67:1 installing (1) 21:9 instance (1) 129:3 instances (2) 79:13 196:18 instead (1) 166:16 instinct (1) 84:1 instructions (1) 142:25 instrument (1) 71:24 instrumented (2) 169:15 184:19 instrumenting (1) 180:14 insulation (20) 15:6 17:5 20:1,10 31:11,19 41:21 65:11,15 73:16 81:18 85:3 94:15 99:17 100:5 138:25 145:25 157:23 171:21 176:24 insurance (1) 12:13</p>
--	---	---	---	--	---	--

intention (2) 34:13 151:18 intents (1) 158:25 interchangeable (2) 29:20,22 interest (3) 35:18 126:24 133:8 interesting (1) 72:11 interestingly (1) 147:16 internal (6) 11:17 29:7 62:11 63:11 124:8 136:13 internally (1) 125:16 interpretation (5) 28:24 34:18 45:9 92:16 178:19 interpreted (1) 97:20 interrupted (2) 21:7 85:13 interrupting (1) 161:25 intervene (2) 3:2,6 into (35) 8:17 12:10 13:14 15:3 16:1 23:12,16 27:13 31:22 36:6 39:9 40:1,24 41:21 42:22 50:18 51:2,14 54:9 56:18 59:5 68:20 72:10 82:20 112:25 113:24 123:9 148:8 149:15,24 162:10 192:13 193:10,13 194:2 intrinsically (1) 22:7 introduce (1) 66:13 introduced (3) 7:10 66:11 157:2 introduction (1) 4:11 intumescent (2) 73:19 87:3 invariable (1) 51:11 invented (1) 120:10 investigate (4) 17:12,16 170:1,15 investigated (1) 169:6 investigating (2) 16:5 175:5 investigation (4) 9:21 16:9,19 175:20 investigations (3) 18:22 29:7 36:13 investment (2) 22:14 36:6 invite (2) 3:14 4:14 inviting (1) 95:23 invoice (14) 7:17,19,19,24 144:25 145:8,9,12 146:3,5,23 147:12,21,24 148:13 149:11,21,25,25 36:18 38:24 40:9,18 41:18 42:6,24 43:6 49:19,24 62:8 65:3 164:24 involve (7) 17:23 29:17 34:5 64:6 65:1 153:13 154:21 involving (1) 62:13 ip (1) 92:18 ipad (3) 8:15 61:21 181:25 ipswich (2) 144:25 146:6 ireland (1) 22:15 iron (1) 3:9 istat (46) 6:24 11:13 26:19 29:9 30:22 43:3 68:2 86:5,10 89:14,18 91:19 92:13,15 100:2 105:16 113:17 114:2 115:6,12 121:24 128:8,18 130:21 142:6,22 143:6,11 144:2 145:8 147:1,9 153:15,21 155:10 156:6 176:18 181:3,5 187:22 189:18,19 190:13 194:19 196:18,22 iso (8) 24:5 62:4,6,12,24 63:5,12,16 issued (20) 55:9 75:20 76:21 110:3 113:19,20 119:17 120:19 125:25 130:22 144:16,18 147:13 151:19 158:13 159:9 161:20 162:25 163:5 170:7 issues (6) 40:8 67:22 95:17,25 139:4 issuing (1) 45:9 istephan (2) 1:5,6 item (10) 52:2 156:6 159:15 161:14 165:25 166:2,2,3,4 168:8 items (10) 12:22,24 139:6 140:7 147:19 156:9 166:7 174:11 175:25 176:3 its (191) 3:24 6:5 14:12 18:8,13,20 20:16,16,21 21:7 23:12 24:18 26:19 27:24 29:2,9,16,21 30:9 31:2 32:6,10 33:19 34:8,12,16,16 36:4 38:17 41:3 43:23 44:10,14,22 45:14,17 47:12 53:11 59:14 62:7 66:4,15,19 68:19 69:10,23 72:10,10,22 78:19,20,23 79:6 81:1,10 82:14 84:1 85:10 86:7,10,14,14 87:8 88:1,9 89:1,3,11,11,17,19,19,20,25 90:2,11,18,20,23,24 91:1,3,10,12,15,21,22,23 92:2,10,13,15,15,16,17 96:18 98:9,9,18 99:21 100:3 102:2,3 104:24 105:2,3,4,5,20,23 106:5 108:2,19,20,21 109:5,5,10 110:8 112:14,24 113:14,23 114:10 115:9,21,24,25 116:9 118:3,4,6,15 119:5,9 120:16 121:5,24 124:3,20 125:19,20,24 126:8,14 129:8,19 130:12,15,18,21 131:15 134:24 135:3 137:25 144:2,8 147:13,14,15 148:25 152:23 153:16,20 155:10,17 157:19 163:18 167:13,17 174:3 175:8,11 176:18 179:9 180:16 181:7,10 186:3 187:22,24 188:7 189:5 190:9,23 193:13,14,14 194:6,20 itself (11) 10:19 11:24 13:15 55:22 73:1 86:6 99:18,20 100:7,11 154:22 ive (5) 6:22,23 26:15 28:24 29:6 40:25 41:14,15 44:17 49:21 53:23 55:16 71:12 74:5 86:7 89:12 90:22,25 93:14 95:16 98:22 99:21 104:23 114:16 119:16 120:11,18 123:18,23 124:3 129:8 143:14 145:18 146:22 147:6,13 148:18 149:20 151:8 159:23 163:22 166:18,23 167:4,8,11 182:2,9,13 191:1 196:15 ivor (1) 178:24		july (3) 5:14,21 163:14 jump (1) 136:20 june (5) 9:15 25:13,14 64:8 171:6 K k15 (1) 13:25 keen (3) 27:16 28:16 133:23 keep (10) 1:13 5:6 50:2,22,23,23 79:10 103:15 116:13 118:17 kelvin (1) 65:7 kept (9) 50:21,25 51:1 56:16,23 58:8,10 182:1,15 key (2) 54:8 187:3 kind (3) 18:21 131:3 179:12 kingdom (1) 62:20 kingspan (41) 13:24,25 14:8 19:11,13,18 20:1,21,25 21:13,23 22:4,10,12 23:7 25:2,12 26:11 41:18 42:10,13 44:14 45:22 49:20 53:13,20 65:11,15 101:19 102:8 103:9 104:8,15,18 105:14,21 107:22 108:5,9 125:20 178:25 kingspans (1) 65:22 kit (1) 151:5 knauf (1) 143:4 knew (9) 41:1 101:19 104:8 107:20 158:14 179:19 180:19 196:22,25 know (79) 5:4 6:15 18:16 20:23 21:13,22 23:3,5 25:5 26:1 29:7 30:8,10 32:25 33:24 37:13 39:8,25 40:9,17 42:10,11,20 47:12,13,13 51:8 52:4 62:22,25 65:24 66:14 81:1 84:1,7 86:21 87:8 91:17 94:5 99:25 100:19,22,23 102:5,20,25 103:5 104:3 108:16 115:9 122:6 133:9 134:22 140:5,12 144:17,19 148:24 149:2 158:6 160:16 162:2,9 165:3 169:23 170:23 173:12 178:10 180:20 181:23 182:1 184:4 187:2,8,20 189:11,18 190:25 197:13 knowing (5) 151:6 152:17 191:19 196:12 197:15 knowledge (15) 28:13 30:2 32:22 34:15 40:25 41:8 44:13,16 72:7 82:18 90:3 98:3 103:2,15 148:10 known (7) 25:9 55:8 103:14 109:5 195:15 196:8 197:6 L lab (2) 24:10,11 label (2) 52:6 181:12 labelled (2) 114:10 181:2 laboratories (1) 23:12 laboratory (3) 31:3,4 62:18 labour (1) 134:13 lakanal (5) 15:19,22 17:4,17 18:22 lamatherm (2) 73:20 74:5 large (5) 17:15 22:14 56:15 87:3 152:25 larger (3) 12:24,25 17:15 last (6) 21:12 61:16 88:24 122:12 128:3 172:3 late (2) 171:6 172:8 later (14) 14:15 25:24 36:14 40:22 52:20 54:20 58:12 65:8 67:15 132:12 133:17 151:19 163:15 173:12 latter (2) 49:16 140:17 lawyers (2) 4:1 178:10 lay (2) 26:9 53:18 layer (32) 132:1 137:16 163:17,19 168:19	169:10,12,18 171:13,17 172:6,6 173:15 180:1,10 184:5,9,22,23,24 187:4 188:12,14,14 190:8 191:8 195:1,6,11,12 196:1,23 layers (5) 73:12 81:17 169:10 184:22 186:24 lead (1) 40:23 leah (1) 78:2 leaning (1) 189:5 learn (1) 28:19 learns (1) 92:6 learnt (2) 27:13 28:7 least (18) 13:17,18 14:6 49:20 67:25 71:5 72:17 76:16 85:24 87:16 91:25 113:2 122:10,17 125:14 128:19 182:15 193:12 leave (2) 19:4 54:10 leaving (2) 25:9,10 led (5) 7:6 17:14 54:5 78:13 162:15 left (20) 19:1,10 20:5 21:2,13 24:7 25:12 36:16 53:13 54:16,17,23 65:21,25 71:18 86:23 119:9 140:4 147:3 185:19 lefthand (2) 183:22,23 legal (3) 1:12 2:25 6:1 legible (1) 84:4 length (2) 95:23 167:8 lennon (7) 79:15 80:5 81:9 141:17 147:14 148:24 186:12 lennons (1) 141:16 lessons (6) 27:13,16,17 28:7,17,18 let (17) 5:4 21:22 65:17,24 66:13 114:8 133:9 137:1 140:5,12 152:15 176:9 183:21,21 185:9 187:2,8 lets (40) 65:5 73:1 77:9 83:25 84:10 86:3 88:9,20,23 89:2 93:17 99:11 110:15 111:2,9 114:4 118:23 120:17 121:6 124:4 131:9 133:1 135:11 136:10 137:1 138:18 139:19 141:6 144:6 145:17 149:1 170:3 172:22,22 176:7,13 177:11 180:25 189:8 191:11 letter (2) 134:12 159:19 level (9) 115:25 116:3 119:7 136:17,20 137:16 173:9 184:23 188:20 liability (1) 12:13 liaising (1) 12:8 liaisonsupervision (1) 78:2 licence (1) 176:22 lies (1) 123:13 life (7) 10:8,10 11:3,9 17:15 35:19,24 lift (2) 140:20 184:14 light (2) 40:8 99:12 lightweight (2) 73:13,15 like (37) 4:8 6:12 15:6 16:10 25:10 29:16 33:20 36:20 39:5 44:10 47:12 65:22 68:17 77:20 92:15 101:18 103:15 104:8,15,22 105:21 106:7 107:12 109:5,6,21 114:21 116:2 120:8,16 131:5,10 136:11 142:17 146:19 181:12 186:3 likelihood (1) 78:19 likely (6) 49:2 67:3 72:1 105:16,20 185:20 likes (7) 38:14 42:4,9 44:14,18 45:22 48:8 limitation (1) 44:1 limited (3) 20:1 29:18 97:10 line (14) 19:22,23 43:13 64:16 70:5,10 87:8 106:1 107:13 135:24 168:3 183:19 185:15 188:16	liner (1) 147:19 lines (6) 29:2 67:12,18 126:21 137:13,19 list (12) 48:14 73:24 74:2,13 75:6 156:8 159:15 163:17,17 164:5,8 196:17 listen (2) 27:21 85:20 lists (1) 41:25 literally (3) 20:19 25:23 116:19 little (19) 26:13 46:25 47:4 53:22 61:1,10 74:18 80:15 81:21 82:20 119:20 121:9 139:9 156:8 157:6 183:10 184:21,25 185:9 live (1) 83:12 liverpool (1) 27:6 loads (1) 98:15 location (1) 77:13 locked (1) 182:18 log (2) 50:20 51:1 logger (2) 61:6,8 long (14) 14:12 19:6 24:19 26:10 53:19 82:14 115:18 118:4 136:7 153:16 177:10 180:4 185:22,24 longer (7) 25:22 75:23 81:16,23 82:1 189:9,13 look (70) 15:5,24 30:8 42:3 43:11 44:21 46:6 50:13 64:14 65:5 66:22 67:13 68:1,24 69:22 70:4 74:9 77:16 78:18 83:5 84:21 85:1 86:3 89:2 91:8 95:22 99:13 110:15 111:2,9,12 112:19 115:7,23 124:11 127:18 130:6 133:1 135:11 136:10,11 138:18 139:19 144:6,10 145:17 146:16 154:24 155:15 156:8 163:14 170:25 172:22,22 173:7 176:7,13 177:11,14 178:3,22 180:25 183:8,23 184:13 189:8 190:12,13 191:11 198:13 looked (10) 8:13 72:10 93:14 17:22 129:8 135:15 165:7 97:12 190:16,23 looking (31) 16:7 17:18 61:1 64:25 84:20 89:14 106:5 108:7 112:18,24 115:8 118:24 119:4 127:19,25 135:15 147:1 149:7,7,12 157:6 159:14 177:16 181:17,19 183:17,18,18 187:25 190:7 196:13 looks (4) 65:22 114:21 142:17 146:19 lorry (1) 151:3 lose (1) 85:9 loss (2) 17:15,15 lost (6) 55:14,16 74:18 81:21 86:9 150:13 lot (5) 10:19 35:14 85:6 98:20 141:3 lots (6) 23:23 36:2,2,2 70:23 72:1 lower (2) 80:15 156:8 lps (1) 164:9 lunch (2) 106:13 186:3 lying (2) 138:5,6 M magnesium (30) 7:20,25 73:13 137:16 144:4,7 145:13 146:17 147:9,18,22 148:2,8,13 149:4,15 152:8 153:3 168:19 169:10,12 173:12 178:23 180:1 184:5,22 186:24 196:1,6,23 main (10) 13:15 15:25 39:22 40:14 64:15 66:15 70:10 81:18 119:8 150:5 mainly (1) 49:9 maintained (1) 56:11	majority (1) 56:21 makes (2) 92:22 175:14 makeup (3) 151:13,21 152:2 making (7) 27:18 36:6 85:7 98:4 104:17 105:5 151:24 male (10) 84:18 85:6 86:4 88:25 99:15,24 100:19,21,23,24 man (1) 197:14 managed (1) 8:16 management (7) 9:19,23 11:16,19 24:15 117:19 176:21 manager (9) 11:12 12:3 19:19,22,23 25:22 63:22 185:15 186:15 managing (1) 27:15 manipulate (1) 111:15 manipulation (1) 108:1 manufactured (2) 73:20 74:5 manufacturer (1) 74:7 manufacturers (3) 22:11 42:7,15 manuscript (3) 118:25 141:6 181:2 many (3) 34:3 93:14,15 march (9) 33:2 132:14 134:7 135:12 139:21 140:14 144:24 145:19,20 mark (3) 68:16 71:15 127:23 marked (1) 68:10 market (2) 23:16 31:11 markup (1) 69:22 markups (1) 69:25 marley (14) 7:20 73:20 101:13,14 102:1,12 103:1,8,18,23 105:11,17 176:23 190:19 martin (50) 1:3,8,23 2:2,7,13,17,23 3:12,21 4:6,12 18:13 40:16 41:11 42:22 43:7 46:22 47:3 52:11,19,25 53:5 106:7,11,16,19,22 107:3,8 112:23 153:18 154:1,4,8,14,17 161:24 162:7,13,23 163:3,7,10 198:13,6,9,13,7 material (28) 22:18 50:8 51:2 56:14 69:15 89:5,9 90:16 105:13,19 146:23 147:9 148:13 150:3,16,22 152:16 191:3 192:12,14,16,17,23 193:9,11 195:2,18 197:3 materials (24) 2:15 12:17,19,21 48:25,25 50:10 56:21 57:7,10,15,15,25 89:20 134:13 138:24 139:1,6 147:3 150:8 152:3,6 193:1 197:15 matter (3) 36:12 58:9 192:2 maybe (23) 14:10 40:12,13 49:25 74:17 75:11 76:22 95:16,17,20 97:4 117:2,17,19 162:21 166:18,19,20 167:10,11 175:9 178:11 189:17 mccarthy (1) 22:5 mchlg (1) 40:23 mcintosh (1) 49:22 mean (24) 13:9 28:20 30:25 45:22 48:22 50:2 58:25 69:3 103:20 109:3 125:23 127:7 132:2 151:4,12 152:10 169:8 170:2 182:6 189:19 190:22 192:25 195:17 196:22 meaning (1) 5:9 means (3) 44:12 52:3 70:20 meant (6) 11:2 81:12 86:24 95:16 97:8 118:18 measure (1) 179:5 measurements (4) 15:19 16:6 70:15 71:23	measures (1) 16:11 measuring (1) 162:18 mechanically (2) 31:14 73:22 meet (13) 1:8 44:22 68:7 69:5 71:22 72:16 119:21 121:18,25 122:23,24 126:16 129:6 meeting (3) 25:8 38:7 117:3 meetings (1) 131:21 member (7) 6:17 7:9 55:5 56:4 57:1 98:22 130:17 members (2) 1:5 4:18 memoire (2) 157:9,11 memory (6) 74:7,7,5 104:24 111:19 133:7 192:9 mention (7) 1:9 3:23 36:25 84:18 93:8 137:15 190:14 mentioned (3) 168:23 190:12 195:19 meredith (1) 178:24 merediths (1) 179:10 mesh (1) 31:18 message (3) 65:21,25 77:19 messages (1) 2:21 met (7) 7:7 17:1 68:3 69:20 71:6 122:4,20 metal (1) 179:10 method (3) 12:12 56:20 176:22 metres (8) 68:21,23 70:19 184:11,12 188:17 189:2,3 michael (3) 33:1 63:14 microphones (1) 1:18 mid (1) 133:6 middle (3) 142:12 188:5,12 midtopic (1) 52:8 midway (1) 47:1 might (19) 27:25 52:9 66:18 78:13 89:1,3 94:6 98:19 101:11,17 104:11 130:2 134:22 145:23 183:9 186:14 187:6 192:10 193:7 mike (1) 22:1 mill (1) 89:6 millett (26) 4:13,15,17 46:17,23,25 47:4 52:7,12 53:6,7 105:24 106:10 107:11 112:23 113:5 153:13,19 154:18,19 161:24 163:11,12 197:25 198:1,2 millimetres (12) 8:3,3 71:15 104:11 105:11,17 105:7 113:2 139:9 152:7 157:20 172:11 180:4 mind (10) 4:4 28:10 71:12 105:7 113:2 139:9 152:7 157:20 172:11 180:4 mine (1) 189:21 mineral (3) 31:12 73:18,19 minimal (1) 94:13 minimum (2) 38:3 126:16 minister (3) 17:10 33:2 41:2 mins (6) 119:19,19,22 121:8,9,20 minutes (10) 25:23 120:7 122:3,22,23 123:4 126:17 129:5,18,23 misanswered (1) 167:12 misdrafting (1) 175:17 misinterpret (2) 175:11,12 misinterpretation (1) 95:18 misinterpreted (3) 95:16 166:19 175:9 miss (1) 180:17 missed (9) 76:25 93:15 179:25 180:15 189:7 195:20 196:16,16,17 missing (1) 172:10 mistake (1) 145:10 mistakenly (1) 7:3 misunderstood (1) 6:13 mitigation (2) 9:19,23 mixed (1) 181:20 mobile (1) 2:18 modelling (2) 9:20,22
--	--	---	--	---	---	--



<p><b>modification</b> (1) 79:11</p> <p><b>module</b> (1) 10:1</p> <p><b>modules</b> (1) 9:21</p> <p><b>moment</b> (16) 2:1 14:16</p> <p>21:14 25:16 27:4,6 42:20</p> <p>52:10 102:9 106:6 153:17</p> <p>165:18 177:13 191:8</p> <p>197:20,25</p> <p><b>monday</b> (2) 140:18 146:4</p> <p><b>money</b> (5) 34:16 35:14,19</p> <p>36:2 98:20</p> <p><b>months</b> (4) 16:15 54:7 65:8</p> <p>123:11</p> <p><b>moorebick</b> (45) 1:3,8,23</p> <p>2:2,7,13,17,23 3:12,21</p> <p>4:6,12 46:22 47:3</p> <p>52:11,19,25 53:5</p> <p>106:7,11,16,19,22 107:3,8</p> <p>112:23 153:18</p> <p>154:4,8,14,17 161:24</p> <p>162:7,13,23 163:3,7,10</p> <p>198:1,3,6,9,13,17</p> <p><b>more</b> (28) 10:8 17:4 29:2</p> <p>32:3 34:24,24 35:3,4 38:16</p> <p>43:17 49:2 66:19 72:4</p> <p>81:7,13 85:11 88:14 90:19</p> <p>91:6 100:17 115:20 136:9</p> <p>157:6,9 172:2 185:20</p> <p>187:18 189:8</p> <p><b>morning</b> (18) 1:3,6,7 3:16</p> <p>4:13,17,17,19,20 52:14</p> <p>53:9 65:7 119:16 120:2,18</p> <p>140:18 165:7 168:25</p> <p><b>most</b> (10) 12:21 21:23 31:10</p> <p>43:10 48:20 51:22,24 64:1</p> <p>81:16 138:24</p> <p><b>move</b> (9) 61:11 69:16</p> <p>70:15,22,22 71:23 77:9</p> <p>111:5 144:13</p> <p><b>moved</b> (1) 49:16</p> <p><b>movements</b> (1) 180:10</p> <p><b>moving</b> (2) 135:11 138:18</p> <p><b>ms</b> (2) 1:5,6</p> <p><b>msds</b> (1) 56:20</p> <p><b>much</b> (28) 1:23 2:7,23</p> <p>4:7,10,12,21,23 14:10</p> <p>52:20 53:5 83:23 86:7</p> <p>99:20 100:7,10 106:18,22</p> <p>107:8,11 152:18</p> <p>154:3,4,14,19 165:13</p> <p>186:2 198:13</p> <p><b>murtagh</b> (2) 22:6,6</p> <p><b>musings</b> (1) 99:25</p> <p><b>must</b> (8) 109:4 126:21</p> <p>132:24 185:5 195:15</p> <p>197:1,4 198:9</p> <p><b>mustnt</b> (1) 185:6</p> <p><b>myself</b> (5) 31:6 45:11 66:13</p> <p>99:1 134:22</p>	<p>125:5,10,12 140:7,11</p> <p>148:20 152:9 162:11</p> <p>171:15 172:1 182:16 189:3</p> <p>193:4 194:7,9</p> <p><b>needed</b> (10) 24:25 25:22</p> <p>44:4 77:23 78:12 81:7,12</p> <p>117:18 128:15 162:9</p> <p><b>needs</b> (1) 150:7</p> <p><b>negligible</b> (1) 193:18</p> <p><b>nest</b> (3) 105:6 108:25 109:2</p> <p><b>network</b> (2) 57:23 88:10</p> <p><b>never</b> (33) 21:1,11 24:21,23</p> <p>34:8,9,19 38:17 41:4 62:15</p> <p>63:6,8,13 74:6 78:20 87:4</p> <p>91:11 102:22 105:7</p> <p>117:23,23,25 120:5</p> <p>121:12,12 122:19 137:12</p> <p>138:14,15,16,17 148:10</p> <p>161:9</p> <p><b>next</b> (14) 7:14 49:11 70:3</p> <p>74:15 86:22 87:17 91:23</p> <p>121:17 132:6 139:25</p> <p>140:17 145:17 162:13</p> <p>165:17</p> <p><b>nice</b> (1) 190:12</p> <p><b>nine</b> (3) 94:13 103:12,15</p> <p><b>ninety-nine</b> (1) 100:25</p> <p><b>nipping</b> (1) 186:3</p> <p><b>nobody</b> (6) 26:2 36:8 92:6</p> <p>74:15 185:8 187:17</p> <p><b>nod</b> (1) 5:8</p> <p><b>noncompliant</b> (2) 45:16</p> <p>71:19</p> <p><b>none</b> (4) 2:22 11:16 175:25</p> <p>176:3</p> <p><b>nonetheless</b> (2) 92:14 94:24</p> <p><b>normal</b> (5) 117:10 156:24,25</p> <p>167:2,3</p> <p><b>normally</b> (1) 1:12 3:4 41:24</p> <p>61:19,23 116:25 117:1</p> <p>166:15 172:18 179:1 189:6</p> <p><b>note</b> (23) 7:16 43:14 57:13</p> <p>139:5 141:20 142:6,15</p> <p>144:7 145:17 146:17</p> <p>147:11,17,21,23 148:23</p> <p>149:2,4,14 150:11</p> <p>194:5,19,24 195:23</p> <p><b>noted</b> (1) 194:22</p> <p><b>notes</b> (16) 57:7,16 61:13</p> <p>79:25 138:19 141:7,12</p> <p>143:20,23 144:4,16,17</p> <p>146:15 147:6 150:9 162:18</p> <p><b>notforprofit</b> (1) 36:5</p> <p><b>nothing</b> (15) 2:16 26:4 41:14</p> <p>43:18 52:3 61:17 76:4</p> <p>86:15 90:19 93:6 98:7,22</p> <p>115:11 118:10 171:14</p> <p><b>notice</b> (14) 54:18 171:8</p> <p>172:9,17 184:8</p> <p>188:8,21,24 190:8,22</p> <p>191:3,6 195:25,25</p> <p><b>noticed</b> (6) 112:14 170:12</p> <p>178:11 186:24 188:10</p> <p>196:15</p> <p><b>noticing</b> (1) 153:4</p> <p><b>notwithstanding</b> (1) 192:21</p> <p><b>nov</b> (1) 65:12</p> <p><b>november</b> (4) 9:16 65:8,20</p> <p>123:9</p> <p><b>nth</b> (2) 152:24 179:6</p> <p><b>nudge</b> (1) 65:12</p> <p><b>number</b> (10) 31:3,6 91:22</p> <p>112:21 114:1 119:4,8,9</p> <p>181:3,3</p> <p><b>numbering</b> (3) 119:6,6,10</p> <p><b>numbers</b> (2) 178:9 181:13</p> <p><b>numerous</b> (2) 104:21,21</p> <p><b>nvelope</b> (1) 64:20</p>	<p><b>observations</b> (2) 61:18,24</p> <p><b>obtain</b> (2) 162:23 164:5</p> <p><b>obtained</b> (2) 139:3 156:10</p> <p><b>obvious</b> (3) 87:9 190:9 197:3</p> <p><b>obviously</b> (15) 14:11 26:5</p> <p>41:14 42:4 52:2 53:13</p> <p>70:21 72:3 85:10 86:11</p> <p>89:4 125:11 126:23 178:20</p> <p>185:15</p> <p><b>occasion</b> (10) 46:1 49:3,6,18</p> <p>51:9 73:9 90:12,16 152:13</p> <p>157:12</p> <p><b>occasionally</b> (2) 8:14 186:12</p> <p><b>occasions</b> (2) 44:5 125:8</p> <p><b>occupied</b> (1) 13:20</p> <p><b>occupy</b> (1) 63:25</p> <p><b>occur</b> (1) 166:15</p> <p><b>occurs</b> (1) 3:12</p> <p><b>oclock</b> (6) 77:15</p> <p>106:14,19,23 198:7,14</p> <p><b>odd</b> (1) 190:22</p> <p>74:15 86:22 87:17 91:23</p> <p><b>odpm</b> (2) 17:9 41:1</p> <p><b>offer</b> (5) 19:5,5,15 134:11,20</p> <p><b>offered</b> (1) 25:6</p> <p><b>office</b> (15) 13:6,8,14 17:10</p> <p>21:18 25:20 27:6 41:2</p> <p>54:10 158:2 169:1,18</p> <p>185:4,10,22</p> <p><b>officer</b> (41) 47:25</p> <p>48:1,14,18,19 51:19</p> <p>55:4,19,20,21,21 56:2,2</p> <p>57:16 59:11,13,14,15,19</p> <p>60:10,10,11,12,13</p> <p>61:6,7,7,14,25 62:1 77:25</p> <p>78:1 79:15,16,22,24 80:2,4</p> <p>81:5 155:7,7</p> <p><b>official</b> (3) 115:6,12 116:9</p> <p><b>officially</b> (1) 114:2</p> <p><b>offload</b> (2) 12:25 151:3</p> <p><b>often</b> (1) 66:8</p> <p><b>oh</b> (18) 24:23 25:9 41:4 46:4</p> <p>49:21,25 60:21 101:2</p> <p>102:22 111:10,13 130:7</p> <p>145:24 152:7 183:24</p> <p>186:3,5 196:14</p> <p><b>oic</b> (3) 60:10 61:13,25</p> <p><b>ok</b> (1) 140:1</p> <p><b>okay</b> (16) 27:3 61:17 71:10</p> <p>77:8 102:11 106:11,15,21</p> <p>109:11 114:17 144:11,21</p> <p>145:24 178:13 181:8 198:8</p> <p><b>omission</b> (1) 93:12</p> <p><b>omissions</b> (2) 55:6 196:17</p> <p><b>once</b> (12) 3:23 12:8 13:18</p> <p>56:25 69:3 115:2 121:4</p> <p>165:22 166:5 168:4,9</p> <p>169:14</p> <p><b>ones</b> (3) 18:18 47:11 189:15</p> <p><b>onto</b> (10) 17:24 37:20 59:8</p> <p>68:19 69:10 151:5</p> <p>166:5,10 168:9 186:25</p> <p><b>open</b> (2) 24:13 92:16</p> <p><b>opening</b> (2) 94:16,22</p> <p><b>openstate</b> (1) 73:19</p> <p><b>operated</b> (1) 50:17</p> <p><b>operating</b> (5) 155:12,15</p> <p>157:2 159:14 166:6</p> <p><b>operations</b> (2) 19:19 25:22</p> <p><b>operator</b> (1) 83:17</p> <p><b>opinion</b> (2) 119:18 121:7</p> <p><b>opportunity</b> (1) 84:15</p> <p><b>opposed</b> (7) 23:23 29:4</p> <p>66:12 151:2 173:24</p> <p>175:5,16</p> <p><b>option</b> (2) 136:16 137:4</p> <p><b>optional</b> (1) 77:17</p> <p><b>oral</b> (2) 13:4 105:24</p> <p><b>orange</b> (11) 115:7 183:15</p> <p>184:1,9 188:1,13 190:8,18</p> <p>191:8,17 197:18</p> <p><b>order</b> (6) 101:12 116:2 123:1</p> <p>157:8 175:21 184:11</p> <p><b>ordered</b> (2) 146:24 148:14</p> <p><b>organisation</b> (7) 33:15 35:23</p> <p>36:4 39:21 42:6 45:10</p> <p>186:6</p>	<p><b>organisations</b> (5) 33:23 34:3</p> <p>42:2,10 63:6</p> <p><b>organised</b> (1) 186:9</p> <p><b>original</b> (1) 55:8</p> <p><b>originated</b> (1) 16:9</p> <p><b>others</b> (3) 31:6 44:20 94:6</p> <p><b>ought</b> (1) 83:11</p> <p><b>ourselves</b> (1) 13:1</p> <p><b>outer</b> (7) 80:12 94:7 132:1</p> <p>159:5 171:13,24 187:9</p> <p><b>outside</b> (5) 10:19 96:18</p> <p>101:12 118:18 129:9</p> <p><b>over</b> (23) 17:11 31:18 44:17</p> <p>61:15 80:1,13,13 106:9,17</p> <p>140:9,22 146:2 147:3</p> <p>150:7 154:1 179:8 187:4</p> <p>188:2 189:5 192:11 193:8</p> <p>197:2 198:11</p> <p><b>overall</b> (4) 86:19 155:2,6</p> <p>169:13</p> <p><b>overhang</b> (4) 188:6,13,22</p> <p>195:25</p> <p><b>overhangs</b> (1) 188:14</p> <p><b>overlap</b> (1) 188:8</p> <p><b>oversight</b> (5) 24:4 79:18,21</p> <p>155:2,4</p> <p><b>overtopping</b> (1) 80:24</p> <p><b>overview</b> (1) 179:7</p> <p><b>own</b> (12) 32:10 34:15,16</p> <p>41:8 51:20 79:17 82:22</p> <p>85:10 100:14 113:22</p> <p>131:22 159:11</p> <p><b>owned</b> (1) 20:21</p> <p><b>oxide</b> (30) 7:20,25 73:14</p> <p>137:16 144:4,7 145:13</p> <p>146:17 147:9,18,22</p> <p>148:2,8,13 149:4,15 152:8</p> <p>153:4 168:19 169:10,12</p> <p>173:12 178:23 180:1</p> <p>184:5,22 186:24</p> <p>196:1,6,23</p> <p><b>oxygen</b> (1) 16:11</p>	<p><b>P</b></p> <p><b>pack</b> (2) 123:13 147:13</p> <p><b>package</b> (3) 16:24 160:13</p> <p>163:22</p> <p><b>packaging</b> (1) 52:1</p> <p><b>packet</b> (1) 76:22</p> <p><b>packs</b> (2) 142:16 143:3</p> <p><b>pages</b> (4) 166:8 175:23</p> <p>176:3,4</p> <p><b>paint</b> (2) 147:19,20</p> <p><b>pallet</b> (1) 141:22</p> <p><b>panel</b> (26) 1:4 4:18 70:4,6</p> <p>85:3 86:6 99:18,20</p> <p>100:6,7,11 102:13</p> <p>103:8,18 124:14</p> <p>136:15,17,18 137:3,4</p> <p>183:16 184:1,2,10 188:1,3</p> <p><b>panels</b> (18) 16:2 17:19 20:9</p> <p>100:14 101:13,14,15,17</p> <p>102:1 103:1,23,24 104:11</p> <p>124:13,14 142:9 143:12</p> <p>176:23</p> <p><b>panned</b> (1) 115:4</p> <p><b>paper</b> (8) 18:11 20:3 56:19</p> <p>76:12 116:19 142:16</p> <p>165:14 182:18</p> <p><b>paperwork</b> (3) 12:12 41:15</p> <p>117:16</p> <p><b>paragraph</b> (76) 6:6,8,11</p> <p>7:15,16 8:1,7 9:14 11:10</p> <p>14:17 15:17 18:25 30:12</p> <p>37:1 43:11,13 48:23 49:11</p> <p>54:24,25 55:25 56:9 57:3</p> <p>64:16 73:4,7 74:1,15 75:2</p> <p>77:2 79:18 80:6,8,16</p> <p>82:15,21 93:17,25 95:2</p> <p>96:7 101:7 109:22</p> <p>110:15,20 111:6,6,8,12,16</p> <p>112:11,18,19,20 113:1</p> <p>119:15 120:11 131:11</p> <p>136:11 138:2,21,22 139:10</p> <p>154:25 164:15 165:17</p> <p>166:15 167:9,22 168:3</p>	<p>169:19 174:13 178:7</p> <p>182:24 191:9,12,22</p> <p><b>paragraphs</b> (5) 47:23 48:15</p> <p>92:24 159:24 173:19</p> <p><b>parina</b> (1) 116:11</p> <p><b>parliamentary</b> (1) 31:22</p> <p><b>part</b> (49) 5:3 11:17 12:2 16:5</p> <p>22:13 26:13 29:3,21,21</p> <p>30:15,16,17 31:7,15 39:8</p> <p>40:1 42:8 43:4 48:7 49:16</p> <p>53:22 54:8 55:10 64:18</p> <p>72:14 76:16 82:22 83:13</p> <p>88:16,24 94:19 98:10</p> <p>117:11 121:17 123:19</p> <p>125:20 131:22 133:18</p> <p>134:16,17 137:2 140:17</p> <p>152:5 170:7,9 178:4</p> <p>182:23 186:7 194:16</p> <p><b>participants</b> (2) 1:11 41:25</p> <p><b>particular</b> (15) 15:7 101:18</p> <p>103:9 104:8,15,18,23,25</p> <p>105:21 107:18,21</p> <p>108:5,13,13,13</p> <p><b>particular</b> (13) 8:10 43:16</p> <p>46:10 51:3 66:4 74:7 79:17</p> <p>138:13,24 155:5 165:6</p> <p>190:20 192:16</p> <p><b>particularly</b> (12) 12:21</p> <p>33:10,23,24 39:15,18 44:5</p> <p>85:20 148:19 170:24 173:3</p> <p>179:14</p> <p><b>parts</b> (11) 16:2 46:13 60:2</p> <p>85:2 86:18 95:22 96:23</p> <p>113:24 157:21 165:21</p> <p>195:10</p> <p><b>parttime</b> (4) 9:16 10:17</p> <p>11:11 12:2</p> <p><b>party</b> (5) 16:21 29:6 34:11</p> <p>39:5 40:4</p> <p><b>pass</b> (6) 35:6 79:11 92:13</p> <p>128:22,23 130:5</p> <p><b>passage</b> (2) 86:4 88:25</p> <p><b>passed</b> (15) 9:21 45:13 57:1</p> <p>82:24 115:11 122:20</p> <p>127:22,24 128:5,11,21,24</p> <p>129:3,12 130:7</p> <p><b>passing</b> (7) 13:5 38:6 89:25</p> <p>100:3,16 122:14</p> <p><b>passive</b> (5) 14:19,23 15:2,4,6</p> <p><b>past</b> (5) 67:22 70:17 151:5</p> <p>152:16 153:4</p> <p><b>patel</b> (3) 113:10 114:15</p> <p>116:11</p> <p><b>patient</b> (1) 2:3</p> <p><b>paul</b> (2) 78:4 160:5</p> <p><b>pause</b> (3) 84:3 95:14 137:5</p> <p><b>pausing</b> (2) 120:20 121:11</p> <p><b>pay</b> (3) 98:19 134:3,5</p> <p><b>paying</b> (1) 98:11</p> <p><b>pdf</b> (2) 111:14 112:7</p> <p><b>peers</b> (1) 119:23</p> <p><b>penultimate</b> (2) 8:8 88:25</p> <p><b>people</b> (23) 13:11 34:1 38:13</p> <p>44:5,11 45:10</p> <p>49:4,17,19,23 59:17 66:18</p> <p>67:22 78:21 98:19 124:18</p> <p>150:10 151:1,2 153:10</p> <p>179:11 181:24 184:20</p> <p><b>peoples</b> (3) 7:13 92:18 109:6</p> <p><b>per</b> (1) 100:25</p> <p><b>perfectly</b> (1) 197:2</p> <p><b>perform</b> (4) 78:17 79:5 94:6</p> <p>126:22</p> <p><b>performance</b> (10) 37:22</p> <p>95:5,17,25 96:10,15</p> <p>119:21 121:18 193:22</p> <p>194:1</p> <p><b>performed</b> (8) 91:5,18 125:2</p> <p>126:25 127:22 128:4</p> <p>195:4,6</p> <p><b>performing</b> (1) 92:20</p> <p><b>perhaps</b> (9) 2:24 44:15 45:2</p> <p>50:19 83:11 106:4 107:25</p> <p><b>play</b> (9) 39:8,25 83:18,19</p> <p>84:2 85:18,20 88:15,17</p> <p><b>played</b> (5) 26:12 53:22 83:21</p>	<p>177:8</p> <p><b>permissible</b> (1) 97:23</p> <p><b>permission</b> (1) 20:20</p> <p><b>person</b> (20) 6:23 7:2,8</p> <p>21:23,25 48:1,13,20</p> <p>49:9,11,14 56:6</p> <p>59:12,19,21 60:7 79:25</p> <p>159:12,13 185:25</p> <p><b>personal</b> (3) 8:14 44:2,3</p> <p><b>personally</b> (1) 30:14</p> <p><b>personnel</b> (1) 48:15</p> <p><b>persons</b> (1) 7:4</p> <p><b>persuasively</b> (1) 153:19</p> <p><b>pertains</b> (1) 163:2</p> <p><b>pessimism</b> (1) 79:1</p> <p><b>phds</b> (1) 36:6</p> <p><b>phil</b> (19) 64:24 66:24 67:8</p> <p>78:7 101:9,10,13,16,17</p> <p>103:23 104:7 108:2,4</p> <p>119:16 120:18 134:10</p> <p>135:23 136:14,21</p> <p><b>philip</b> (3) 1:17,20 199:3</p> <p><b>philosophy</b> (3) 22:13</p> <p>24:14,16</p> <p><b>phils</b> (1) 119:23</p> <p><b>phone</b> (6) 2:19 66:12,16</p> <p>97:2,8 129:14</p> <p><b>phoned</b> (1) 129:4</p> <p><b>photo</b> (1) 58:16</p> <p><b>photograph</b> (16) 50:15,19,22</p> <p>51:2,14,22,24 94:9</p> <p>124:20,22 165:23 168:5</p> <p>183:23 188:5,11,12</p> <p><b>photographed</b> (4) 52:1</p> <p>166:3,5 168:9</p> <p><b>photographic</b> (3) 57:24</p> <p>111:19 157:20</p> <p><b>photographing</b> (1) 164:24</p> <p><b>photographs</b> (60) 50:24,25</p> <p>51:6,7 56:17 58:19 59:7</p> <p>94:11,13 111:10 152:6</p> <p>163:16,16,19,22,25 165:2</p> <p>166:9 167:24 168:12,12,17</p> <p>169:3,9,22 170:4,15</p> <p>171:8,24</p> <p>172:5,10,17,22,23,25</p> <p>173:2,9 177:13,14,24</p> <p>178:4 180:25 181:15,23</p> <p>182:22,25 183:5 187:25</p> <p>188:7 189:8,9,11 190:3,7,8</p> <p>191:14 196:5,7,13,25</p> <p><b>photos</b> (5) 49:14 56:6 61:14</p> <p>181:1 187:12</p> <p><b>phrase</b> (2) 15:11 107:25</p> <p><b>physical</b> (2) 120:7,8</p> <p><b>pick</b> (1) 88:14</p> <p><b>picked</b> (3) 76:11 117:2</p> <p>141:23</p> <p><b>picking</b> (1) 103:17</p> <p><b>picture</b> (7) 13:7 52:3,5</p> <p>171:19,22 183:8 187:5</p> <p><b>pictures</b> (3) 56:17 58:18</p> <p>183:18</p> <p><b>piece</b> (8) 17:7,18 18:1,7</p> <p>116:19 150:3,16 151:5</p> <p><b>pieces</b> (2) 17:10 142:17</p> <p><b>place</b> (25) 3:3 16:14 70:8,12</p> <p>86:15 89:5,11 93:21,22</p> <p>102:23 116:1 122:18,19</p> <p>126:14 132:8 150:2,15,21</p> <p>159:25 186:1,10,16 187:8</p> <p>192:20 193:23</p> <p><b>placed</b> (2) 126:20 127:6</p> <p><b>places</b> (3) 190:19 195:12</p> <p>197:3</p> <p><b>plan</b> (1) 119:5</p> <p><b>planned</b> (1) 140:2</p> <p><b>planning</b> (2) 20:20 133:15</p> <p><b>plans</b> (1) 179:3</p> <p><b>plant</b> (1) 12:15</p> <p><b>plasterboard</b> (4) 13:1 73:12</p> <p>149:5,9</p> <p><b>platform</b> (1) 184:14</p> <p><b>play</b> (9) 39:8,25 83:18,19</p> <p>84:2 85:18,20 88:15,17</p> <p><b>played</b> (5) 26:12 53:22 83:21</p>	<p>85:22 88:19</p> <p><b>playing</b> (2) 157:19 180:3</p> <p><b>please</b> (75) 1:13 2:4 4:3,25</p> <p>5:6,8,14,20 6</p>
--	--	---	---	--	---	---	--

<p>prepare (1) 152:23</p> <p>prepared (8) 56:11 76:16</p> <p>93:1 122:10 166 158:7</p> <p>160:17 189:18</p> <p>preparing (4) 117:5</p> <p>143:21,24 166:14</p> <p>presence (3) 168:18 180:1</p> <p>196:6</p> <p>present (3) 2:25 6:9 184:1</p> <p>presentations (2) 44:18,24</p> <p>press (2) 98:13 127:2</p> <p>pressures (1) 36:15</p> <p>presumably (4) 19:15 25:5</p> <p>142:1 168:11</p> <p>presumption (1) 94:14</p> <p>pretty (4) 23:13 88:20 186:2</p> <p>188:13</p> <p>prevented (1) 80:24</p> <p>previous (8) 67:7 111:6</p> <p>141:4 143:15 155:23</p> <p>161:1,3 190:7</p> <p>primarily (6) 33:11 40:11</p> <p>48:19 66:15 68:4 69:18</p> <p>primary (3) 95:7 96:2 98:17</p> <p>prime (4) 17:10 33:2 39:17</p> <p>41:2</p> <p>principal (2) 27:4 28:14</p> <p>principle (1) 45:24</p> <p>print (2) 113:21 115:20</p> <p>printed (9) 56:18 58:7,8</p> <p>113:22 116:19 165:13,25</p> <p>166:10 181:11</p> <p>printing (1) 157:15</p> <p>prior (8) 61:5 82:17 103:12</p> <p>140:25 164:20 165:2</p> <p>169:22 182:25</p> <p>privatised (4) 33:1 34:17,23</p> <p>39:21</p> <p>pro (1) 155:15</p> <p>probably (34) 10:14,23</p> <p>16:15,18 20:10 28:3 32:21</p> <p>36:19 40:14 41:13 48:4</p> <p>49:25 51:9 66:2,6</p> <p>67:11,15,18 90:7 97:7</p> <p>106:5,8 114:19 132:5</p> <p>135:1 141:2 157:24 167:4</p> <p>169:16 174:21 175:7 179:8</p> <p>191:10 196:19</p> <p>problem (7) 47:2 52:18 85:6</p> <p>93:10 118:6 148:1 150:5</p> <p>problems (3) 1:15 3:7 23:11</p> <p>procedure (3) 155:16 157:2</p> <p>159:15</p> <p>procedures (7) 46:18</p> <p>47:7,8,16 60:1 155:12</p> <p>166:7</p> <p>proceed (1) 140:1</p> <p>process (12) 48:5,11 50:3</p> <p>55:11 76:11 82:11 115:3</p> <p>125:21 140:16 152:5 166:8</p> <p>187:13</p> <p>processed (1) 124:23</p> <p>processes (1) 46:17</p> <p>produce (1) 126:10</p> <p>produced (6) 18:6 43:4</p> <p>46:10 109:24 110:1 114:2</p> <p>producing (1) 17:3</p> <p>product (8) 22:16 78:20 92:3</p> <p>105:23 145:2,14 176:23</p> <p>193:2</p> <p>products (12) 13:1 14:9</p> <p>22:10,11,12 23:9,15,16</p> <p>30:18 35:6 46:11 144:24</p> <p>professional (3) 44:3 90:23</p> <p>91:14</p> <p>profit (1) 36:5</p> <p>programme (4) 12:5 38:23</p> <p>47:6,20</p> <p>progress (2) 19:7 20:3</p> <p>project (16) 23:3 41:10</p> <p>51:19 55:19,21 56:2</p> <p>59:13,14 113:25 155:7</p> <p>166:10,11 174:5,6,7,22</p> <p>104:21</p> <p>projects (1) 104:21</p> <p>pronounced (1) 188:13</p> <p>proper (1) 76:1</p>	<p>property (1) 17:16</p> <p>proposed (1) 157:4</p> <p>propriety (1) 36:15</p> <p>protect (1) 35:19</p> <p>protection (2) 15:2,6</p> <p>protocol (1) 156:16</p> <p>protrudes (1) 188:2</p> <p>protrusion (1) 188:8</p> <p>prove (1) 117:21</p> <p>provide (7) 48:15 67:17</p> <p>73:24 75:15 110:18 182:21</p> <p>193:21</p> <p>provided (12) 12:11 28:5</p> <p>49:1 50:1 75:17 76:18</p> <p>82:12,13 110:22 117:25</p> <p>160:23 165:11</p> <p>providing (4) 94:8 130:16</p> <p>161:17 166:16</p> <p>proximity (2) 150:6 184:16</p> <p>prudent (1) 38:25</p> <p>public (1) 123:10</p> <p>publication (2) 30:23 42:21</p> <p>publicly (1) 18:8</p> <p>published (3) 30:20 33:12</p> <p>37:2</p> <p>pull (3) 24:7,21 50:14</p> <p>pulled (5) 60:4 81:14,25 87:2</p> <p>157:7</p> <p>punchholes (1) 76:10</p> <p>pure (2) 38:20 39:6</p> <p>purple (1) 115:8</p> <p>purpose (7) 15:21 117:22</p> <p>126:18 127:4,19 193:23</p> <p>197:8</p> <p>purposes (3) 11:24 69:7</p> <p>158:25</p> <p>pursuant (2) 62:23 63:15</p> <p>pursued (1) 24:19</p> <p>pursuing (1) 9:24</p> <p>push (5) 85:8 86:9,16 87:12</p> <p>93:7</p> <p>pushed (1) 24:21</p> <p>pushing (3) 39:8 40:1 89:12</p> <p>puts (1) 99:25</p> <p>putting (7) 23:16 27:13</p> <p>40:10 161:21 180:21</p> <p>187:4,9</p>	<p>68:5 69:7,21 70:3,7,13,25</p> <p>71:4,8,10,21 72:5,9,17</p> <p>73:1,18 74:6,9,12,18,21</p> <p>75:2,9,14,21,25 76:4,14,24</p> <p>77:1,7,9 78:10,25</p> <p>79:8,14,21 80:2,4,6</p> <p>81:5,12,21 82:2 83:5,11</p> <p>84:7,10,17,21,24 85:17</p> <p>86:1 87:8,14</p> <p>88:3,5,11,14,23 89:17</p> <p>90:2,8,14,22 91:7,21</p> <p>92:10,24 93:5,17</p> <p>95:2,19,21 96:6</p> <p>97:10,13,21 98:1,3,13</p> <p>99:11 100:4,19,22,24</p> <p>101:3,5</p> <p>102:3,9,12,16,19,24</p> <p>103:7,13,17,21,23</p> <p>104:2,6,14,17,25</p> <p>105:7,10,16 108:12,16,23</p> <p>109:2,8,12,16,19 110:14</p> <p>111:9,12,15,19,22</p> <p>112:9,11,13,17 113:8,20</p> <p>114:4,8,13,18,20,22,24</p> <p>115:12,15 116:5,13,16,21</p> <p>117:5,8,13,25</p> <p>118:16,20,23 119:3,11</p> <p>120:10,14,17,22,24</p> <p>121:2,6,15,17,23</p> <p>122:1,6,10,14</p> <p>123:6,8,17,21,24</p> <p>124:1,4,17,25 125:5,14,22</p> <p>126:3,8,18</p> <p>127:2,8,13,17,23</p> <p>128:3,10,15,18,23</p> <p>129:17,22 130:10,15,20,25</p> <p>131:3,8 132:7,10,18,21</p> <p>133:1,21,23 134:3,6,24</p> <p>135:2,7,11 136:3,5,10,25</p> <p>137:7,11,14,18,21,24</p> <p>138:5,8,18</p> <p>141:5,15,17,19,22</p> <p>142:1,4,9,11,14,20,22,24</p> <p>143:2,8,11,17,20,23</p> <p>144:1,6,10,12,19,22</p> <p>145:9,12,16,23</p> <p>146:1,19,22 147:8,12,25</p> <p>148:5,7,12</p> <p>149:1,6,10,14,19,21</p> <p>150:2,14,21</p> <p>151:4,12,19,24</p> <p>152:10,15,21 153:2,7</p> <p>155:10,15,21</p> <p>156:1,3,8,12,19,24</p> <p>157:1,11,14,16,18</p> <p>158:3,6,11,14,19,21,24</p> <p>159:2,6,8,14,18</p> <p>160:2,6,8,16,22</p> <p>161:2,12,17 163:21,25</p> <p>164:2,5,13 165:16</p> <p>166:13,22 167:1,5,8,13,20</p> <p>168:3,15,17,21 169:5,9,19</p> <p>170:3,9,12,14,20,25</p> <p>171:2,6,8</p> <p>172:3,8,12,15,17,21</p> <p>173:7,12,16 174:2,4,23</p> <p>175:2,4,11,17,25</p> <p>176:3,7,16,18,20</p> <p>177:3,11,18,20,24</p> <p>178:7,13,18,22</p> <p>179:9,16,24</p> <p>180:17,21,23,25</p> <p>181:6,8,10,15,19,23</p> <p>182:1,4,8,11,14,22</p> <p>183:4,7,13,21,25</p> <p>184:4,8,21 185:2,5,9,22,24</p> <p>186:3,6,9,21 187:16,22,25</p> <p>188:5,8,11,19,21,24</p> <p>189:8,19,22,24</p> <p>190:1,7,10,13,18,22 191:7</p> <p>193:1,6,17,22</p> <p>194:5,12,17,22</p> <p>195:1,8,14,20,25</p> <p>196:3,5,10,17,20,22</p> <p>197:20,23</p> <p>q10a (1) 155:1</p>	<p>q10r (1) 139:8</p> <p>q7a (1) 109:23</p> <p>q8m (1) 110:16</p> <p>q8p (1) 131:15</p> <p>q8s (1) 96:8</p> <p>qualification (1) 151:21</p> <p>qualifications (1) 10:25</p> <p>quality (2) 74:19 143:4</p> <p>quantity (1) 145:1</p> <p>question (98) 3:22 5:2 15:21</p> <p>21:20 29:8 32:18,20,23</p> <p>34:1,12,21</p> <p>36:17,18,20,21,22 37:9</p> <p>38:9,11 39:24 45:23</p> <p>53:16,18,25 54:2 55:18</p> <p>63:1 70:3 73:7 74:9 76:25</p> <p>80:8 82:7,14</p> <p>93:10,18,19,24 95:20 96:8</p> <p>97:10 98:12 99:24 105:15</p> <p>107:14,17,24 108:3 109:23</p> <p>110:16 114:5,22 126:12</p> <p>122:12 127:2,23</p> <p>128:4,5,15 131:14 132:2</p> <p>138:22 139:7,8,10 146:25</p> <p>150:14 152:10 155:1</p> <p>158:21 160:22 162:13,17</p> <p>164:16 166:18,19,22</p> <p>167:6,12,13 170:18,21</p> <p>173:20 174:15,16,24</p> <p>175:10,12,21 178:1,3,4,19</p> <p>179:9 187:24 191:11,23</p> <p>194:15</p> <p>questioner (1) 107:14</p> <p>questioning (1) 8:12</p> <p>questions (9) 4:14,16,25 5:1</p> <p>39:23 62:3 63:10 75:3</p> <p>199:5</p> <p>quicker (1) 133:20</p> <p>quickly (4) 21:19 54:6</p> <p>133:24 173:18</p> <p>quiet (1) 10:5</p> <p>quite (12) 10:5 35:14 39:24</p> <p>70:18 72:10,11 95:20</p> <p>132:15 149:10 173:18</p> <p>194:20 196:17</p> <p>quotation (7) 134:7,8</p> <p>135:13,14,21 144:23 145:9</p> <p>quote (2) 85:18 88:16</p>	<p>92:10 98:12 100:15 120:14</p> <p>148:7 183:7 193:25</p> <p>rear (1) 73:11</p> <p>reason (25) 6:14 26:6 28:14</p> <p>34:22 53:14 68:3 79:1</p> <p>80:17 88:6 99:4 103:14,17</p> <p>118:8 119:17 120:19</p> <p>156:12 165:4 169:24</p> <p>170:1,15 184:17,18 186:23</p> <p>187:18 194:3</p> <p>reasonable (1) 46:20</p> <p>reasoning (2) 94:1 194:4</p> <p>reasons (2) 66:18 108:9</p> <p>recall (73) 7:2 40:13 42:12</p> <p>43:9 46:3,5 62:11 63:13,17</p> <p>66:6 74:4,10,14 75:6,13</p> <p>76:20 88:6,11,13 94:8 97:5</p> <p>102:2,5,6,13,17,18,23</p> <p>104:10,13,14,17 105:9</p> <p>108:18 110:3,21 118:21</p> <p>120:2,4 123:12 126:12</p> <p>127:16 132:9,10 133:11,12</p> <p>137:8 138:6,24 141:2</p> <p>143:16,19 148:10,21 152:7</p> <p>153:9 157:8,22 158:4</p> <p>159:7 171:11 172:19,20</p> <p>181:9 182:3 185:13,19</p> <p>186:9,23 192:18,22</p> <p>194:10,18</p> <p>recalls (1) 102:3</p> <p>receipt (1) 134:19</p> <p>receive (2) 119:23 164:6</p> <p>received (5) 57:7 159:16,20</p> <p>161:7,9</p> <p>receiving (2) 2:21 156:5</p> <p>recently (1) 5:24</p> <p>recognise (5) 5:17 70:2</p> <p>141:11 181:9 189:12</p> <p>recollection (23) 14:7 16:7</p> <p>24:18 35:16 73:10,25</p> <p>82:19 102:14 103:7,21</p> <p>105:8 109:9,14 136:22</p> <p>137:12 138:3,10,12</p> <p>147:5,16,18 155:4 192:9</p> <p>recollections (1) 192:5</p> <p>recommendation (1) 63:16</p> <p>recommendations (1) 27:16</p> <p>reconstruction (3) 15:20,22</p> <p>16:14</p> <p>record (6) 51:19 77:7 116:13</p> <p>117:14 161:19 192:22</p> <p>recorded (6) 50:21 112:4</p> <p>120:11 139:14 166:7</p> <p>191:19</p> <p>recording (1) 95:10</p> <p>records (3) 74:9 76:2 116:8</p> <p>rectified (1) 55:7</p> <p>reducing (1) 80:20</p> <p>redundancy (1) 54:18</p> <p>redundant (3) 21:10 25:18</p> <p>87:23</p> <p>refer (14) 7:16,17 46:10 56:1</p> <p>116:22 142:6 143:18 164:9</p> <p>175:25 176:3 177:12,25</p> <p>178:11 195:20</p> <p>reference (8) 75:2 94:12</p> <p>106:2,9 113:23 133:4</p> <p>134:10 189:20</p> <p>references (2) 17:20 144:9</p> <p>references (1) 175:23</p> <p>referred (2) 93:5 123:21</p> <p>referring (5) 129:22 147:25</p> <p>163:25 172:25 176:14</p> <p>refers (4) 52:4 119:6 140:23</p> <p>164:8</p> <p>reflected (1) 159:6</p> <p>reflections (1) 147:23</p> <p>refresh (1) 75:5</p> <p>refute (1) 180:22</p> <p>regard (12) 11:24 33:25</p> <p>36:8,18 59:9 91:16 117:24</p> <p>123:12 130:7,8 136:21</p> <p>193:5</p> <p>regarding (1) 48:24</p> <p>regards (1) 139:24</p> <p>regular (1) 62:11</p>	<p>regulation (6) 30:2 35:21</p> <p>38:8 39:18 41:21 44:21</p> <p>regulations (6) 11:19,25 30:5</p> <p>35:13 38:21,23</p> <p>regulatory (1) 15:11</p> <p>reinduct (1) 177:1</p> <p>reinduction (1) 177:8</p> <p>reinforcing (1) 31:18</p> <p>reissue (1) 55:7</p> <p>reissued (1) 158:17</p> <p>rejected (1) 96:22</p> <p>relate (4) 19:25 175:25</p> <p>176:4,12</p> <p>related (2) 110:22 192:2</p> <p>relating (7) 3:25 7:24</p> <p>95:5,17 96:1 191:14</p> <p>198:10</p> <p>relation (8) 8:11 17:5 21:24</p> <p>82:8 83:2 96:15 102:12</p> <p>176:8</p> <p>relationship (1) 29:23</p> <p>relationships (1) 29:14</p> <p>relative (1) 86:18</p> <p>release (5) 15:19 16:6,13,23</p> <p>17:3</p> <p>released (1) 112:6</p> <p>relevant (10) 9:18 12:12</p> <p>29:20 58:19 109:25 131:19</p> <p>171:12 181:7,10 190:5</p> <p>reliability (1) 108:4</p> <p>reliable (1) 187:19</p> <p>reliance (5) 126:19 127:5,7,7</p> <p>152:18</p> <p>reliant (4) 75:23 152:22</p> <p>182:20 193:20</p> <p>relied (3) 118:14 180:6</p> <p>195:21</p> <p>rely (1) 193:17</p> <p>relying (3) 56:6 72:6,18</p> <p>remain (1) 29:15</p> <p>remember (36) 6:21 7:11,13</p> <p>16:16 17:19 41:18 42:18</p> <p>52:16 63:19 67:6,9 74:6</p> <p>102:7,8,21 104:16,22,25</p> <p>108:16 110:11,13</p> <p>112:13,20 117:4 118:5</p> <p>124:21 127:14 130:25</p> <p>133:25 135:25 136:6</p> <p>171:15 186:17,18 194:9,10</p> <p>remembered (1) 75:11</p> <p>remembering (1) 113:3</p> <p>remind (3) 4:2 52:16 60:18</p> <p>remit (5) 35:23 40:20 62:25</p> <p>96:18 122:19</p> <p>remotely (1) 1:10</p> <p>removed (3) 133:19 135:6</p> <p>140:2</p> <p>removing (1) 135:8</p> <p>rendered (1) 31:17</p> <p>repeat (7) 5:1 31:9 74:20</p> <p>76:25 105:15 122:12</p> <p>161:14</p> <p>repeating (3) 159:1,2,4</p> <p>replicated (1) 45:14</p> <p>reply (3) 65:19 85:5,14</p> <p>report (46) 18:6 27:17 28:5</p> <p>43:14,15 46:14,15 55:5,10</p> <p>56:5 58:7,25 90:24</p> <p>109:19,24,25 110:1,3,5,7,9</p> <p>112:2 117:18 119:17</p> <p>120:19 126:11 130:22</p> <p>155:18 156:20 163:1,18</p> <p>171:5,12 172:14 181:3</p> <p>182:12 185:25 190:6</p> <p>191:15,20 193:12,14,16</p> <p>195:9,23 196:3</p> <p>reported (2) 22:5 197:6</p> <p>reporting (2) 179:11 185:11</p> <p>reports (9) 46:9 49:20</p> <p>109:25 151:20,20,25,25</p> <p>192:24 195:8</p> <p>representative (2) 110:17</p> <p>192:3</p> <p>representatives (3) 1:13 2:25</p> <p>6:1</p> <p>represented (1) 42:17</p>	<p>request (11) 49:12 67:1</p> <p>68:15 96:21 111:25</p> <p>112:3,5 144:15 146:7</p> <p>149:16,24</p> <p>requested (4) 96:21 110:7</p> <p>112:2 182:9</p> <p>require (3) 35:21 122:24</p> <p>177:10</p> <p>required (10) 12:13 24:12</p> <p>48:24 56:11 57:4 68:7</p> <p>77:17 129:9 161:7 186:6</p> <p>requirement (8) 44:8 63:16</p> <p>70:9 71:17,21 129:11</p> <p>164:10,11</p> <p>requirements (4) 24:22</p> <p>69:19 71:2,20</p> <p>requires (1) 163:17</p> <p>research (21) 19:20,25</p> <p>20:12,23 21:15,24</p> <p>22:9,16,22 23:4,8,11,15</p> <p>24:3 33:21 36:6 39:15</p> <p>42:25 43:5,8,10</p> <p>resend (1) 140:22</p> <p>resent (1) 140:7</p> <p>resistance (3) 15:1,3,13</p> <p>resource (1) 20:9</p> <p>respect (11) 45:18 47:16</p> <p>56:11 76:7 90:2 93:23</p> <p>96:10 110:18 141:8</p> <p>192:5,19</p> <p>respects (2) 6:11 138:13</p> <p>responded (1) 101:16</p> <p>responding (1) 32:11</p> <p>responds (1) 140:13</p> <p>response (4) 68:8 99:19</p> <p>100:6 131:14</p> <p>responsibilities (1) 9:8</p> <p>responsibility (3) 55:2,4</p> <p>59:10</p> <p>responsible (7) 47:15 48:22</p> <p>61:4,23 155:11 164:20</p> <p>185:25</p> <p>rest (5) 59:11 64:1,1 176:9</p> <p>194:13</p> <p>restructured (1) 21:21</p> <p>restructuring (1) 25:21</p> <p>result (5) 18:1,7,21 27:14</p> <p>31:23</p> <p>results (2) 16:19 23:8</p> <p>resume (3) 52:14 53:1 198:6</p> <p>retained (1) 122:15</p> <p>retest (3) 94:18 132:16</p> <p>133:24</p> <p>return (2) 71:14,16</p> <p>returned (1) 180:12</p> <p>reused (1) 141:3</p> <p>reveal (1) 116:16</p> <p>revenue (3) 34:6,24,25</p> <p>review (7) 58:12 66:25 67:9</p> <p>116:16 172:12 190:2</p> <p>191:14</p> <p>reviewed (10) 6:10 93:2</p> <p>110:23 165:1,11 168:11</p> <p>169:21 172:8 180:9 190:4</p> <p>revised (6) 45:2 158:21</p> <p>160:2,9,19,24</p> <p>revision (1) 159:6</p> <p>rewrote (1) 174:21</p> <p>richard (1) 38:15</p> <p>rid (3) 12:17 26:6 53:14</p> <p>rig (50) 8:13 17:24 67:24</p> <p>68:18 69:4,9 71:5 80:24</p> <p>83:13 86:25 100:13 101:12</p> <p>136:8 141:1 147:2</p> <p>151:6,14,22 152:2,4,16,23</p> <p>158:9,10,10 159:12,12,13</p> <p>163:4 164:19 167:14</p> <p>168:13 169:13 172:6</p> <p>173:10,13 180:2 184:23,24</p> <p>185:11 186:25 187:20</p> <p>188:19 190:20 191:25</p> <p>192:2,19,23 195:3,18</p> <p>right-hand (5) 70:13 177:22</p> <p>183:8,19 187:25</p> <p>rigs (3) 17:25 135:8,22</p> <p>ring (1) 40:16</p>
---	---	---	---	--	--	--

<p>risk (10) 9:19,22 11:2,18 12:12 18:4,4 56:19 87:9 174:10</p> <p>rob (1) 101:8</p> <p>rockwool (3) 42:9,13,16</p> <p>role (25) 9:7 11:12,15 12:2,3 13:19,20,20 14:16,21 27:3,4,5,11 28:6 30:3 38:16 45:6 47:25 48:21 49:3 55:23 59:19 79:24 135:4</p> <p>roles (5) 29:14 77:24 79:14,23 80:1</p> <p>room (3) 2:11,19 3:1</p> <p>roper (64) 7:8 64:9,15 65:21,25 66:8,22 68:6 69:23 70:1 73:6 94:8 101:2,3,6,24 102:3 103:5 105:24 107:15 108:7,9 113:9 114:14,18 115:16 116:5,14,23 117:8 118:16 120:2,10 121:23 122:6 123:8 124:7 126:4,9,23 128:12 129:4 130:25 131:25 132:19,23 133:2,23 134:8 135:12,25 136:12 137:15 139:21 145:19 146:9 148:14 153:2 180:18 184:4 190:15 192:7,12 193:9</p> <p>ropers (13) 6:16 102:14 109:12 119:12 123:17 135:16 136:22 138:2 144:3 146:12 149:16 193:17</p> <p>roughly (1) 10:11</p> <p>round (3) 35:7 92:5 161:2</p> <p>route (8) 36:25 37:7,16 38:5 39:2,11 40:3 41:20</p> <p>routes (1) 44:22</p> <p>rs (2) 82:9 138:25</p> <p>rs50000 (1) 64:4</p> <p>ruby (7) 190:19 191:11,16 194:7,8,12 195:12</p> <p>rubycloured (1) 197:3</p> <p>ruler (1) 166:3</p> <p>rules (1) 118:1</p> <p>ruling (1) 137:21</p> <p>run (9) 2:8 12:5 20:21 21:1 24:5,11 26:2 46:24,25</p> <p>running (7) 21:3 23:4 47:5,19 49:9 179:12 180:13</p> <p>runs (1) 20:23</p>	<p>87:5 89:21 90:6,16,25 97:18 99:16,23 100:1 102:19,20 107:19 108:16,17 109:4,13 120:10,24 121:15 123:13 130:7 133:16 137:21 138:5,12,14 140:10 141:13 147:22 152:7 173:24 175:17,18 185:2</p> <p>scale (1) 166:2</p> <p>scales (1) 65:22</p> <p>scanned (3) 76:9,13 165:15</p> <p>scanning (1) 76:11</p> <p>scheduled (1) 5:4</p> <p>scheduling (2) 12:16 135:3</p> <p>scientific (3) 15:11 27:5 94:24</p> <p>scientist (1) 27:5</p> <p>scissor (2) 140:20 184:14</p> <p>scope (2) 97:23 134:15</p> <p>screen (1) 1:24 2:5 5:16 61:11 66:23 111:16 141:10 163:18 167:25 171:24</p> <p>screw (1) 52:3</p> <p>scroll (5) 61:1,10 64:22 71:12 139:9</p> <p>scrutiny (1) 24:12</p> <p>sealing (1) 147:20</p> <p>search (1) 170:22</p> <p>second (18) 45:4 64:14 81:16 83:20 94:2 119:15 132:25 133:16 139:20 142:2 156:6 159:13,15 162:25 168:21 169:19 184:24 188:11</p> <p>secondary (3) 17:7 18:1,7</p> <p>seconded (3) 40:21 41:1,6</p> <p>secondlevel (1) 180:2</p> <p>seconds (1) 189:17</p> <p>section (1) 85:18</p> <p>secured (2) 111:14 112:7</p> <p>security (3) 150:5,25 151:10</p> <p>see (159) 1:18 5:20 15:9 16:14 22:4 23:2 24:1 31:20 32:4,5 34:14,22 39:1 41:23 50:17 51:5 52:19 53:3,4 55:12 56:1,23 57:2,24 59:10,24 60:10,11,15,25 61:2,4,5,12 62:19 63:7 64:8,12,14,21,25 65:9,14,19 67:5,19 68:8 69:7 71:14 73:4,5 75:2,14,21 76:3,10,14 77:16,18 78:25 80:7 81:7 82:6 83:12,15 84:17,18,22 85:5 86:21 87:1,5,19,21 90:19,20 97:10 99:14 100:15 103:21 105:24 106:1,19 107:5,7,14 111:22 112:11 113:14 114:24 118:25 119:7,15 121:6 123:19 124:1,4,15,16 125:6,10 127:21 129:22 134:6,21 135:18 138:2 139:10 140:23 141:19,20,23 142:11,17,24,25 143:18 144:1 145:1,3,6,16 146:18 147:10 150:9 152:21 154:10 152:12 155:17,21,22 156:5,19 158:21 159:6 160:2,8 168:3 170:22 173:7 176:10 180:10 181:1,20 182:11 183:15,25 184:13 185:2 188:1,6,7,15,16,17 189:4,6 193:6 197:7</p> <p>seeing (8) 74:5 105:22 143:16 157:22 194:9,10,10 198:14</p> <p>seeking (6) 36:11 70:7,16 71:21 92:10 113:5</p> <p>seem (2) 54:15 55:14</p> <p>seemed (1) 167:18</p> <p>seen (61) 6:25 8:12 17:20 34:19 41:15 44:17,23 54:5 63:15 66:3 81:6,12</p>	<p>84:13,14 86:7 87:7 89:13 90:1,22 91:1,3 94:20 95:9 97:1,13 98:15,16,18 99:21 100:3 101:10,22,22,23 104:6 110:25 117:7 123:23 124:2,7 129:14 132:7 143:14 146:5,7,22 147:6,20 148:1 160:13,18,19 163:21,22 182:3,9,13 183:5 185:5 186:19 194:5</p> <p>sees (2) 119:16 120:18</p> <p>sef00000052 (1) 69:23</p> <p>semidivisional (1) 14:25</p> <p>send (5) 66:17 114:18 130:7 143:4 146:2</p> <p>sending (2) 116:9 124:25</p> <p>senior (9) 6:16 7:9 21:23 27:4 55:4 56:4 57:1 130:17 185:25</p> <p>sense (7) 15:11 92:14,23 161:3 197:13,19,24</p> <p>sensible (1) 106:8</p> <p>sent (21) 14:11 63:4 64:21 65:6 68:4 69:22,25 74:11,12,23 75:24 76:1,17 111:7,14 113:9 116:4 124:5 127:17 128:12 135:18</p> <p>sentence (5) 8:8 91:8 121:17 169:20 175:14</p> <p>sentences (1) 175:8</p> <p>separate (2) 15:14 189:13</p> <p>separated (1) 189:13</p> <p>september (4) 26:23,24,25 27:1</p> <p>sequential (1) 29:13</p> <p>series (2) 58:18 59:7</p> <p>serviced (1) 197:8</p> <p>service (1) 62:21</p> <p>services (1) 134:11</p> <p>set (20) 28:6 38:1 47:25 76:1 82:16 113:19 114:9 118:14 119:24 126:18 127:4 141:7 160:25 166:6 173:2 178:10 189:9,11,14 192:4</p> <p>sets (3) 56:15 60:5 79:14</p> <p>setting (1) 153:3</p> <p>settled (1) 115:2</p> <p>setup (1) 61:3</p> <p>seven (1) 116:2</p> <p>several (2) 44:18 132:5</p> <p>sfs (1) 135:9</p> <p>shake (1) 5:8</p> <p>shall (4) 3:9,16 4:13 153:20</p> <p>shape (1) 91:19</p> <p>shareholders (1) 36:8</p> <p>sheathing (3) 73:14,23 173:14</p> <p>sheet (14) 58:16,17 59:1,8 61:18,24 155:19 156:15,17,20 157:10 159:5 163:19 176:21</p> <p>sheets (8) 56:20 59:11 142:16 143:3,3 157:7 174:10 181:11</p> <p>sheffield (1) 145:25</p> <p>shipp (1) 18:13</p> <p>short (10) 3:8,16 52:23 107:1 154:6 177:8 185:18 191:2,3,6</p> <p>shortage (2) 191:5 192:15</p> <p>shortfalls (1) 29:8</p> <p>should (31) 1:24 2:24 5:15 38:4 41:20 57:19 73:16 79:3 83:8,15 86:20 117:23 129:4 130:18 131:13 148:23 150:18 157:25 159:9 162:21 166:20,24 169:7 172:2,7 174:20 175:9,15 182:2,4 185:7</p> <p>shouldnt (3) 116:9 122:2 130:19</p> <p>show (26) 30:12 59:25 69:18 88:18 106:2 107:12 112:18 115:13,21 118:11 124:13</p>	<p>126:24 127:9 131:14 135:17 138:21 144:14 147:17 161:18 163:22 167:7 168:12,18 173:19 188:11 191:23</p> <p>showed (7) 118:7,7 147:12 159:15 167:6 194:6 196:25</p> <p>showing (5) 78:8,10 94:13 171:14 172:5</p> <p>shown (13) 95:21 96:23 114:16 117:5 119:20 121:18 139:15 143:20,23 145:18 146:22 167:3 174:11</p> <p>shows (6) 142:16 145:12 147:21 148:7 166:17 188:12</p> <p>shut (1) 81:9</p> <p>sic (1) 74:15</p> <p>side (11) 40:9 43:8 45:8 48:11 70:13 78:17 79:4 140:4 177:22 183:22 187:25</p> <p>siderise (1) 141:21</p> <p>sides (1) 41:12</p> <p>sig (5) 145:20,21,24,24 147:10</p> <p>sign (7) 48:10 55:5 80:19 118:3 156:16 181:13 189:25</p> <p>signature (8) 5:20,22 135:16 142:8,23 143:6 181:14 189:12</p> <p>signed (15) 56:5 60:7 134:6,23,24 135:14 146:12 147:14 148:3,23 150:10,11 153:11 156:14 185:16</p> <p>significance (1) 196:8</p> <p>signify (1) 119:3</p> <p>signingoff (1) 55:11</p> <p>simco (10) 69:24 73:13 140:18,23 158:10 159:10,10 163:6,6 191:25</p> <p>similar (1) 116:18</p> <p>simon (2) 78:3,5</p> <p>simple (3) 127:18 167:13 175:12</p> <p>simpler (1) 178:14</p> <p>since (5) 3:22 28:11 30:15,22 182:9</p> <p>single (13) 10:5,7 35:20 123:19 150:3,16,22 156:14 179:5,5,6 187:14,17 198:1 1:3,8,21,23 2:2,7,12,13,17,23 3:12,21 4:5,6,12 5:23 46:22 47:3 52:11,19,25 53:4,5 106:7,11,16,19,22 107:3,7,8 112:23 113:4 146:18 153:18 154:1,4,8,12,14,17 161:24 162:4,7,13,23 163:3,7,9,10 198:1,3,6,9,13,17</p> <p>sir (56) 1:3,8,21,23 2:2,7,12,13,17,23 3:12,21 4:5,6,12 5:23 46:22 47:3 52:11,19,25 53:4,5 106:7,11,16,19,22 107:3,7,8 112:23 113:4 146:18 153:18 154:1,4,8,12,14,17 161:24 162:4,7,13,23 163:3,7,9,10 198:1,3,6,9,13,17</p> <p>sit (1) 42:16</p> <p>site (10) 11:21 15:14 49:2 67:4,15,17 162:19 176:15 177:6,7</p> <p>sits (1) 39:14</p> <p>sitting (2) 111:15 115:8</p> <p>situation (4) 89:8 90:5,9,17 six (3) 16:15 116:2 148:20</p> <p>size (2) 80:20 166:3</p> <p>skills (1) 29:19</p> <p>skipping (1) 142:14</p> <p>slightly (4) 46:23 142:14 175:9 188:2</p> <p>slot (1) 65:14</p> <p>small (2) 102:10 149:23</p> <p>smaller (1) 12:22</p> <p>smallerscale (1) 15:7</p> <p>smith (4) 40:13 44:20 54:11 145:20</p> <p>smoke (1) 16:1</p> <p>sneak (3) 151:5 152:16 153:3</p> <p>soandso (3) 98:8 109:4 148:18</p>	<p>solely (1) 147:3</p> <p>solicitors (2) 76:19 170:15</p> <p>solution (1) 136:17</p> <p>somebody (16) 21:16 36:20 46:4,6 66:16 99:6 110:12 118:7 150:11 151:16 177:1 185:5,7 187:10,13 196:5</p> <p>somehow (1) 76:6</p> <p>something (46) 10:4 19:9 25:19 30:8 32:9 33:14 38:2,3 41:24 45:10,17,19 47:13 54:14 62:8 69:10 70:5,21 74:16 81:22 83:15 87:11 89:22 91:16 98:13 100:5 103:4 111:5,7,20 113:21 116:2 120:5,9 122:20 126:21 138:11 149:7 169:5 184:11 187:10 189:24 191:1 193:13 197:10,23</p> <p>sometimes (9) 44:11 49:7 51:8 87:8 89:8 90:9,10 150:10 151:1</p> <p>soon (2) 2:2 85:9</p> <p>sop (3) 76:5 159:14 161:7</p> <p>sort (24) 10:14 14:25 23:18 29:5 34:1 41:23 46:8 50:7 51:23 54:13,15 63:7 66:13 68:1,15 79:23 105:2 133:17 152:2 157:5 172:1 180:10,14 189:16</p> <p>sorts (1) 86:19</p> <p>sought (4) 96:9,14,21 136:13</p> <p>sound (3) 3:7 74:19 81:21</p> <p>sources (2) 85:15,15</p> <p>source (6) 34:6,24 39:17,19 89:10 192:17</p> <p>space (1) 29:9</p> <p>spaced (1) 141:13</p> <p>spandrel (2) 16:2 17:18</p> <p>speak (1) 66:16</p> <p>speaker (10) 84:18 85:6 86:4 88:25 99:15,24 100:19,21,23,24</p> <p>speaking (3) 113:1 120:2 126:22</p> <p>special (1) 142:25</p> <p>specific (6) 72:14 91:22 95:5,16,25 136:21 specifically (15) 11:16 12:20 17:18 20:7 28:9,10,20 42:11 43:1 59:20 62:13,14 67:11 83:2 171:11 155:6 158:5 186:12 158:8,11 159:16,20 161:8</p> <p>specified (1) 43:17</p> <p>specifying (2) 192:14 193:11</p> <p>specimen (1) 55:3</p> <p>speculating (2) 169:5,16 speculation (2) 94:19,24</p> <p>spell (2) 28:1 46:1</p> <p>spelt (1) 124:2</p> <p>sphere (1) 35:21</p> <p>split (1) 14:24</p> <p>spoke (2) 136:14,16</p> <p>spoken (3) 66:10 119:16 120:18</p> <p>sponsor (6) 82:10 110:5 112:3 114:11 151:4 165:20</p> <p>sponsors (7) 37:5,10 38:9 68:16 79:9 110:9 187:20</p> <p>spotted (1) 58:4</p> <p>spread (15) 15:25 16:1,4 17:6 18:4 37:22 80:13 85:11 89:4 95:7 96:2 192:11 193:8,19 195:23</p> <p>spreadsheet (1) 115:10</p> <p>sprinkler (1) 15:1</p> <p>staff (13) 6:17 7:9 12:14,15 43:3 55:4 56:4 57:1 98:23 130:18 153:11 179:15,17</p> <p>stage (14) 10:6 19:7 23:20 33:20 72:24 79:5 80:9 81:1 88:8 170:14 171:8 172:13 173:13 196:1</p> <p>stages (7) 101:21 102:10</p>	<p>114:4 126:23 137:1 170:3 171:14</p> <p>stairs (1) 189:6</p> <p>stand (3) 34:16 41:14 77:8</p> <p>standard (33) 24:8 30:23 33:8,12,18 38:3 41:25 42:1 44:6 47:7,8,15 60:1 62:17,18 64:18 68:8,21 69:1,5,13,20 70:9,18 71:2,9,11,17 155:12,15 157:1 159:14 166:6</p> <p>standards (3) 22:22 41:24 42:14</p> <p>standing (1) 86:22</p> <p>start (20) 2:9 4:9,21 9:7 26:22 31:21 34:5 46:20 60:23 61:6 64:3 65:17 67:3 77:14 80:8 109:21 136:8 139:24 164:20 186:17</p> <p>started (8) 3:23 10:4 20:2,6 24:9 33:3 34:9 115:18</p> <p>starting (2) 21:3 125:15</p> <p>starts (8) 61:8,8 64:16 82:15 83:19 85:19 88:25 138:22</p> <p>stated (2) 122:25 151:21</p> <p>statement (79) 5:13,18,24 6:18 7:23 8:25 9:14 11:10 12:13 14:17 15:17 18:25 30:12 43:12 45:7 47:23 48:16,23 54:24 55:25 56:9,20 60:3 73:4 75:6,9,17,25 76:6,16 79:16 80:6 82:5 83:1,2 91:2 92:24 93:2,17 97:19 98:9,9 101:6 109:21 110:14 143:13,18,21,24 144:9 154:24 160:14 163:23 164:14 165:17 166:14 170:10 173:1,17 176:22 178:5,8 182:24 191:7,12,21 193:6,14</p> <p>statements (1) 98:4</p> <p>states (1) 136:23</p> <p>station (1) 39:15</p> <p>stays (2) 89:5,10</p> <p>steel (4) 73:13,15 140:19,24 stenson (1) 22:1</p> <p>stephen (14) 44:19 49:6 65:7,9 124:6 129:17 131:7 133:3 134:25 135:13,18 155:6 158:5 186:12</p> <p>steps (3) 35:17 36:14 44:13</p> <p>steve (9) 36:20 48:8 49:18,23 78:4,4 124:10 135:20 185:20</p> <p>sticking (1) 14:16</p> <p>still (16) 6:15 14:7 18:8 21:9 29:21 31:2,2 37:17,20,23 39:21 65:12 123:3 124:11 146:18 180:15</p> <p>stills (1) 190:3</p> <p>stood (1) 187:14</p> <p>stop (6) 47:1 81:4 83:15 86:15 125:23 198:4</p> <p>stopped (8) 120:7,15,16 121:4,5,5 122:22 197:7</p> <p>stopping (2) 119:19 121:9</p> <p>storage (1) 140:6</p> <p>stored (1) 58:4</p> <p>story (1) 135:12</p> <p>straight (4) 11:7,8,9 194:20</p> <p>straightaway (1) 33:22</p> <p>strange (1) 158:24</p> <p>stream (1) 23:17</p> <p>strengthen (1) 101:11</p> <p>strengthening (1) 136:16</p> <p>strict (1) 70:18</p> <p>strictly (1) 118:17</p> <p>strike (3) 158:24 160:22 161:8</p> <p>strip (1) 190:18</p> <p>stripdown (2) 8:10 165:5</p> <p>structure (4) 16:8 22:5 86:22</p>	<p>164:25</p> <p>structured (2) 36:4 48:6</p> <p>struggle (1) 27:25</p> <p>struggled (2) 32:23 191:2</p> <p>struggling (1) 84:6</p> <p>studied (2) 9:16 11:2</p> <p>study (1) 10:1</p> <p>stuff (6) 25:24 72:3,12 76:22 86:12 141:4</p> <p>stupid (1) 197:14</p> <p>subject (6) 62:23 77:12 115:6,24 125:17 135:13</p> <p>subsequently (7) 8:13,17 54:12 55:10 94:2 112:3 125:13</p> <p>substantive (2) 26:15 53:23</p> <p>substrate (3) 31:15,16 85:8</p> <p>successful (2) 35:3,8</p> <p>sudden (1) 54:9</p> <p>subject (6) 51:22 101:17 104:12</p> <p>sufficient (2) 51:24 74:12</p> <p>suggest (2) 33:16 108:8</p> <p>suggested (4) 101:11 133:6 136:21 137:13</p> <p>suggesting (3) 74:2 92:12 99:11</p> <p>suggestion (2) 70:22 108:12</p> <p>suggests (1) 79:14</p> <p>suite (2) 21:2 22:25</p> <p>summarising (2) 29:10 57:3</p> <p>summary (5) 12:7 28:18 96:3,25 97:14</p> <p>summation (1) 95:12</p> <p>summer (1) 16:17</p> <p>superimposed (1) 124:13</p> <p>supervising (1) 179:17</p> <p>supplied (3) 139:6 145:21 165:25</p> <p>supply (2) 139:3,4</p> <p>support (3) 63:11 108:25 109:2</p> <p>supporting (1) 73:13</p> <p>suppose (3) 33:19 104:5 170:21</p> <p>supposed (1) 116:4</p> <p>supposition (5) 29:5 34:13 38:21 39:6,7</p> <p>sure (24) 3:14 12:11 24:7 27:18 35:12 39:24 44:14 51:25 67:25 69:8 78:21,23 85:7 112:17 124:17 147:25 150:22 151:13,24 153:15 179:3,19 187:19 194:12</p> <p>surely (1) 197:4</p> <p>surface (8) 80:13 81:18 75:18 117:17 176:6</p> <p>surprising (3) 159:18 160:22 161:8</p> <p>swap (1) 80:1</p> <p>switched (1) 1:14</p> <p>system (105) 3:3 8:19 21:10 31:13,13 38:6 39:1 41:22 43:16,16,18,23 44:9,21 45:5,13,16,19 46:7,10 49:13 50:17 57:5,8,17,23,25 58:4 61:8 75:18 117:17 176:6 surprising (3) 159:18 160:22 161:8</p>
---	---	--	--	--	---	--

194:3 195:5,10 <b>systems</b> (2) 24:8 31:10,12,19 35:12 37:22 38:4 58:15 63:14 68:22 85:7 100:25 151:8 182:17,20	69:1,5,13,19,20 70:9,17 71:1,2 72:4,7,11,15 73:1 76:2,7,9,13 77:12,20 78:13,15,25 79:4,17 80:9,11,17,21,22 81:8 82:4,8,10,17,23 83:3,9,13 86:25 87:15 91:3 93:2,21 94:2,6 95:6,11 96:1 97:3,9,11,14 98:5,10,16 100:13,17 101:8,12,15 103:25 104:20 105:14 108:1,5 109:20 110:4,4,8,18,19,21,23,23 111:10 112:3,4 113:12,16 114:6,10,11 115:11 116:7,16 118:9,12,13 119:5,18 120:1,6,15 121:4,4,8 122:22,25 123:2 124:10,19,21 125:3,17,19,21,22 126:20 127:1,6,10,15,18 128:1,8,11,25 129:5,7,18,23 130:11,13,22 131:1,9,10,18,24 132:1,3,4,5,11,13,23,25 133:15,16,18 134:1,4,16 135:3 136:18 137:4 140:11,25 142:2 143:9 146:20 147:2,3 150:4,17,23 151:4,12,20,22,25 152:23 153:14 154:22 155:2,5,8,18 156:13,19,21 157:14,17 158:7,13,18,22 159:1,2 160:4,21,22,25 160:3,3,9,10,12,17,20,23 161:1,3,10,23 162:10,12,15 163:1,4 164:7,19,20,23 165:1,10,11,20 166:11,14,17 167:2,5,14,15,20,22 168:11,17 169:9,13,14,21 170:7,25,25 171:2,3,5,9 172:1,5,6,8,9,10,12 173:4,23,24 174:5,5 176:1,5,12,24 177:3,15,20,24 178:12,15 179:18 180:13 181:4,16 182:2,4,15,23 183:2 184:19 187:20 188:9,19 189:16,17 190:4,6 191:15,15,17,19,25 192:1,2,19,23 193:23 194:22,25 195:4,8 196:24 197:7,12 <b>tested</b> (13) 14:13 43:16 73:8 95:7 96:2,11,15 139:12,12 158:15 161:4 162:3 179:20 <b>testing</b> (46) 12:5,19 14:20 15:7,14,15,15 16:14 18:21 21:11 22:18,25 23:24 29:14 30:14,18,22 31:1 33:24 34:4 35:23 45:8 47:6,10,11,19 48:3,7,11,11,21 62:13,18 65:2 77:9 79:10 81:6 82:11 93:23 101:9 115:19 135:22,24 143:5 151:14 152:13 <b>tests</b> (32) 6:14,18 13:24 14:3,8,15 15:5 21:3,4 23:4 26:12 31:6,9 34:24 35:3,10,19 37:6,10 38:9 39:1 46:9 47:16 53:21 54:12 60:2 98:15 138:25 139:2,17 141:8 166:18 <b>text</b> (1) 194:18 <b>thank</b> (37) 1:23 2:7,13,17,23 4:6,10,12 5:12 9:6 13:3 15:16 51:17 52:7,20,21 53:5,7 54:22 82:2 96:6 106:18,21,22,24 107:8,11 140:15 154:3,4,14,17,19 163:11 198:13,16,17	<b>thanking</b> (1) 4:21 <b>thanks</b> (2) 4:10 78:6 <b>thats</b> (135) 5:13 6:4 8:23 11:12,14 13:21 18:16 24:23 25:5 27:21 30:22 32:24 35:1 36:17,19,20 38:11 45:20 52:11 55:18 56:2 68:4 69:17 70:21 72:15 73:6,17 75:3 76:17,20 79:18 84:4,8 85:10,11 89:10,14,24 90:5,15 92:1 93:12,24 95:18 97:3,7,19 99:15 100:10 101:2,3 105:3 106:1,2,8 109:1,11 111:11 113:4,4,15 114:21,22 117:22 118:10 120:7 122:17 123:24 124:19 127:10 129:21 130:14,24 135:10 138:4 141:2,16,21,22,22 142:22 143:6,17 144:11,16 145:10,11,11,15,24 146:12,19 148:5 149:3,6,14 153:21,25 155:14,20 156:6 157:19 162:7 163:9,13 167:10,25 168:22,23 169:4,16 170:11 173:14 174:19,20,25 175:15,22,23 179:21 181:3,22 183:3,9,13 184:15 187:11 188:17 189:1,21 193:16 194:24 195:19 197:22 198:5 <b>themselves</b> (1) 23:19 <b>theoretical</b> (1) 15:24 <b>thereabouts</b> (1) 11:14 <b>thereafter</b> (2) 19:22 164:19 <b>thered</b> (1) 116:18 <b>therefore</b> (12) 94:14 96:18,19 104:3 105:20 109:4 113:1 123:9 129:6,12 148:12 159:18 <b>theres</b> (15) 17:13 23:17 41:24 66:6 67:15 76:8 86:21 91:15 115:11 118:10 152:25 158:16 160:4 163:1 190:15 <b>thermocouple</b> (7) 56:16 113:16 114:5 116:2 119:6 168:21 184:23 <b>thermocouples</b> (7) 70:19 129:11 137:16 141:13 173:6,9 180:2 <b>theyd</b> (16) 12:8 15:23 20:19,20 22:14 26:5 44:7 53:13 71:18 72:21 77:5 78:15 79:6 91:3 177:1 190:18 <b>theyll</b> (3) 2:2 72:13 187:10 <b>theyre</b> (22) 23:13 27:18 35:9,22 75:18 86:22 91:4,17 103:3 105:5 116:4 124:18 152:25 163:5,23 169:4 171:11 181:1 189:16 190:2,5 194:7 <b>theyve</b> (9) 17:9 22:17 68:22 70:19 71:14 72:24,25 92:21 116:3 <b>thickening</b> (6) 101:16 102:1,12 104:11 136:15 137:3 <b>thickness</b> (7) 103:8,18 193:4 194:13 195:1,20 197:4 <b>thicknesses</b> (4) 102:25 103:3,6 195:18 <b>thing</b> (19) 12:16 15:13 33:7 40:7 41:13 52:9 56:21 59:16 88:14 89:2 100:13 143:13 162:8 167:25 168:22 171:11 179:13 180:14 197:9 <b>thinking</b> (1) 162:8 <b>thinner</b> (5) 105:13,19,22,23 195:11 <b>third</b> (7) 8:6 43:9 45:4 64:16	99:14 145:6 168:3 <b>thoroughfare</b> (1) 13:15 <b>though</b> (4) 39:21 105:1 159:18 185:6 <b>thought</b> (21) 6:14,16,24 7:3,8 19:8 38:2 54:13 77:5 88:9 93:11,13 98:25 99:2,2 101:16 104:10 107:19 111:13 144:8 178:6 <b>thouria</b> (1) 1:5 <b>three</b> (6) 29:10 30:22 40:23 123:11 141:22 151:9 <b>threshold</b> (2) 150:4,17 <b>thresholds</b> (1) 129:10 <b>through</b> (30) 2:9 7:23 10:14 12:22,24 13:6 16:25 17:1,8 20:6 21:11 47:1 48:10 55:7 61:11 62:20 63:7 66:13 70:20 75:12 78:21 89:7 90:18 114:2 115:15 150:18 179:2,18 187:6,13 <b>throughout</b> (2) 189:17 193:4 <b>throughsection</b> (1) 74:17 <b>tight</b> (1) 10:18 <b>time</b> (94) 3:18 7:12 10:5,8,11,19 11:25 12:23,25 13:9 14:12 17:9 19:6,22 20:2,25 26:17 31:2,10,25 32:19 33:13 35:16 36:16 38:11,25 40:20 41:1 42:5 43:10 46:11 51:22 52:16 53:25 54:3,5,18 62:5 65:22 66:9,10 72:5 75:7,9,22 79:2,8 83:20 86:17 87:10,17 88:15 91:3,23 97:11,11 106:5 115:18 118:5 123:6,14,18 124:12 125:14 128:12 134:21 136:1 143:14 147:5 151:7 153:8,10 155:5 157:4 167:17 171:2 175:7 177:9 180:4 182:13 183:4 184:21,25 185:12,16,18,24 188:8 190:3,25 191:4 192:16,18 197:1 <b>times</b> (2) 1:14 47:5 <b>timescales</b> (2) 65:22 133:10 <b>timing</b> (1) 165:8 <b>titled</b> (1) 113:25 <b>today</b> (8) 1:9,16 4:22 9:4 123:23 140:22 182:13 183:4 <b>today's</b> (2) 1:4 116:7 <b>together</b> (12) 24:7,22 42:1 50:14 54:13 58:6 60:4 86:12 110:15 111:3 157:7 161:21 <b>told</b> (19) 7:14 8:7 13:4 25:20 47:21 70:25 94:21 98:8 101:13 103:23 105:20 118:9 121:13 122:8,15 130:10 146:9 178:25 180:18 <b>tom</b> (10) 78:1 79:15 80:4,5 81:9 141:16,17 147:14 148:24 186:12 <b>tomorrow</b> (3) 191:8 198:7,14 <b>tony</b> (8) 36:21 48:8 64:9,15,16 155:24 173:22 192:3 <b>too</b> (9) 98:19 105:3 166:23 167:4,11 175:7 178:20 179:8 185:18 <b>took</b> (16) 10:19 11:11,15 19:18 57:10 79:25 81:10 93:22 97:2 117:17,17 122:19 151:9 181:23 196:5,7 <b>tools</b> (1) 11:22 <b>topic</b> (6) 9:7 30:1 47:1 63:24,25 153:16 <b>touching</b> (1) 111:18 <b>towards</b> (5) 31:7 49:16 61:21 63:8 150:8 <b>tower</b> (5) 27:14 28:8,17 34:2	182:17 <b>traceability</b> (1) 25:1 <b>trade</b> (2) 42:12,17 <b>trail</b> (1) 41:15 <b>train</b> (2) 112:16 113:7 <b>training</b> (3) 11:15,17 32:6 <b>transcriber</b> (1) 27:25 <b>transcribers</b> (1) 5:7 <b>transcript</b> (19) 5:10 53:9 69:11 83:25 84:11 86:2 88:18,20,23 93:14 94:20 95:21,22 97:22 99:12,13 101:23 105:25 107:12 <b>transcripts</b> (3) 93:15 95:9 96:24 <b>transparent</b> (1) 24:13 <b>treated</b> (1) 11:20 <b>trespa</b> (2) 49:20 64:19 <b>tried</b> (3) 51:25 66:9 139:24 <b>trigger</b> (1) 83:11 <b>truck</b> (1) 148:21 <b>true</b> (2) 8:25 92:11 <b>trust</b> (1) 152:25 <b>truth</b> (2) 179:21 186:18 <b>try</b> (10) 3:14,21 4:2 27:9 57:13 67:21,24 157:6 183:21,21 <b>trying</b> (8) 23:24 86:25 93:12 107:18 109:8 149:19 157:4 197:9 <b>tuesday</b> (1) 1:1 <b>turn</b> (12) 63:24 73:1 88:3,8,9 98:23,25 109:19 131:9 148:17 153:13 159:11 <b>turned</b> (5) 88:6,12 92:5 140:25 196:14 <b>turning</b> (2) 146:15 150:9 <b>twice</b> (1) 6:8 <b>two-page</b> (1) 189:11 <b>type</b> (3) 12:16 56:21 73:18 <b>typing</b> (1) 61:21 <b>typographical</b> (1) 73:17	<b>U</b> <b>ugly</b> (1) 190:23 <b>uk</b> (2) 20:1 43:24 <b>ukas</b> (4) 24:6 62:20 96:18 97:23 <b>ultimate</b> (1) 22:13 <b>ultimately</b> (10) 35:13 57:15 92:7 112:6 118:6 125:7,9 128:7,25 152:22 <b>um</b> (2) 85:6 86:10 <b>unapproved</b> (1) 113:19 <b>unaware</b> (1) 94:1 <b>unbeknownst</b> (1) 8:16 <b>uncovered</b> (1) 173:10 <b>underneath</b> (3) 61:15 145:2,5 <b>understand</b> (37) 3:11 5:11 14:13 18:8 36:11,11 38:19 39:12 44:9 45:23 46:6 47:14 68:2 72:20 85:25 91:5 92:2,20 95:20 102:19,22 107:19 109:8,8 111:10 115:24 125:8 139:23 149:19 152:10 162:17,19 166:22 174:23 182:22 187:16 198:12 <b>understanding</b> (41) 4:24 16:25 17:7,17 18:3 20:8 22:3 23:10 24:2,24 27:9 30:4 32:13,19 37:5,17,25 40:11 41:23 43:21 44:6 45:21 54:8 76:12,24 77:1,4 110:6 115:4 132:13 133:14 139:3 141:3 147:4 158:12 160:21 161:13 162:5 190:11,25 191:1 <b>understood</b> (8) 11:2 44:7,25 76:21 97:10 108:10 122:17 139:11 <b>undertake</b> (13) 15:12 16:22 33:15 35:23 37:18 44:23 77:20 94:18 122:24 123:1 157:16 164:5	<b>undertaken</b> (6) 60:6 94:3 104:20 128:2 132:14 156:9 <b>undertaking</b> (4) 16:21 30:17 60:1 131:25 <b>undertook</b> (4) 14:20 15:18 31:6 175:21 <b>undisclosed</b> (1) 184:9 <b>undo</b> (1) 72:25 <b>unfair</b> (2) 100:8 129:15 <b>unfortunately</b> (1) 75:22 <b>unique</b> (3) 72:8,19 125:19 <b>united</b> (1) 62:20 <b>university</b> (3) 11:7,8,9 <b>unless</b> (5) 43:2 44:9 89:1,3 183:17 <b>unlikely</b> (3) 46:19 96:19 108:19 <b>unprocessed</b> (1) 113:18 <b>unrealistic</b> (2) 107:23,24 <b>unsuccessful</b> (1) 35:10 <b>untidy</b> (1) 190:16 <b>until</b> (13) 4:1 34:2 37:2,14 38:8 45:2 65:23 79:10 123:16,23 153:21 194:10 198:19 <b>unusual</b> (9) 69:6 110:4,8,8 148:17 159:24 160:1 161:22,23 <b>updated</b> (10) 38:21 58:22 158:6,21 160:5,8,16,19 161:9,17 <b>updating</b> (1) 38:23 <b>upper</b> (1) 81:16 <b>upsetting</b> (1) 83:14 <b>urethane</b> (2) 42:7,15 <b>used</b> (23) 8:14 16:12 17:24 31:4 39:19 41:22 42:1 43:2 49:12 54:14 57:25 74:25 77:2 88:7 101:15 103:24 107:22 135:9 144:4 165:22 184:15 191:16 192:14 <b>useful</b> (1) 119:24 <b>using</b> (9) 12:15 15:10 20:11 50:14 72:12 108:5 137:15 158:12 181:25 <b>usual</b> (7) 1:4 77:24 117:20 159:10 165:20 166:2 185:14 <b>usually</b> (3) 42:2 55:3,6 <b>utilise</b> (1) 28:13	<b>V</b> <b>vague</b> (2) 115:3 178:20 <b>valid</b> (1) 37:23 <b>value</b> (1) 134:13 <b>various</b> (2) 17:20 30:18 <b>vat</b> (1) 134:18 <b>verbally</b> (1) 115:14 <b>verified</b> (1) 152:1 <b>verify</b> (1) 152:1 <b>verifying</b> (1) 152:12 <b>versaguard</b> (3) 146:3,10 <b>versaliner</b> (4) 145:4,5,14,21 <b>versasealer</b> (1) 145:6 <b>version</b> (7) 37:14 42:5 84:5 105:13,19 113:18 183:2 <b>versions</b> (2) 160:12,12 <b>vertical</b> (1) 73:18 <b>via</b> (2) 163:6,6 <b>video</b> (19) 6:10,23,25 83:6,13,18,21 85:17,22 86:21 88:10,14,15,19 93:2 95:9 97:22 101:24 127:12 <b>videos</b> (2) 83:5 93:14 <b>views</b> (1) 108:2 <b>virtual</b> (1) 2:25 <b>visiblity</b> (1) 183:11 <b>vision</b> (1) 3:8 <b>visit</b> (1) 22:7 <b>visited</b> (1) 22:8 <b>visual</b> (1) 55:18 <b>vitality</b> (1) 46:12 <b>voice</b> (1) 5:6 <b>voicemail</b> (2) 66:1,4 <b>voices</b> (1) 42:13	<b>W</b> <b>wales</b> (1) 30:5 <b>walking</b> (1) 189:6 <b>wall</b> (24) 12:10 31:11,16,19 50:8,9 68:19 70:10 77:21 94:10 119:8,9 133:5,5,18,20 135:6 140:2,3,11 141:4 177:16,21 191:17 <b>wallboard</b> (1) 143:4 <b>walls</b> (2) 31:4 50:6 <b>wanting</b> (1) 37:6 <b>wants</b> (1) 91:13 <b>warning</b> (1) 83:11 <b>warringtonfire</b> (2) 19:2 42:4 <b>wasnt</b> (80) 6:18,19 7:1,20 10:6 13:15 16:21 17:1,23 18:2 19:7 21:17 26:5,10 28:9,10,14 32:1,18 33:25 34:11 36:7,18 37:4 38:12 39:5 40:4 41:2 43:5 45:6,10,18 46:8 49:3 51:10 53:19 57:13 62:8,25 65:3 69:5 81:2,8 91:25 93:11 98:1 103:11 110:8 112:17 116:24 117:1,3 125:11 128:15 130:6 132:10 140:24 143:25 148:17 158:6,21 153:8 156:22 158:10 159:19,24,25 161:3,22,23 162:1,20,22 179:14 185:4 186:13 187:12 194:22 195:13,17,19 <b>wasted</b> (1) 88:10 <b>watched</b> (1) 6:22 <b>watching</b> (7) 83:14,16 86:23 127:11,11 187:14,17 <b>water</b> (1) 89:24 <b>way</b> (60) 5:2 10:21 14:24,25 16:4 19:7 21:22 24:10,23 27:21 30:9 35:7,7 36:3 39:19 40:10 41:16,18 45:1 47:13 48:3,6 50:5 54:6 68:19 82:23 86:14 89:19,20 90:18 91:19 95:15 97:4,8,18,19 100:9 102:21 108:18,20 110:12 117:9 126:24 129:1 132:24 139:11,11 151:16 152:8 157:5 167:16,18,18 174:20 175:8 180:4 191:18 195:3,6 196:14 <b>wayne</b> (2) 145:20 146:1 <b>ways</b> (2) 27:8 91:22 <b>wear</b> (2) 99:3,5 <b>wearing</b> (3) 83:7,9 99:10 <b>website</b> (2) 18:9 32:25 <b>wed</b> (7) 10:7 21:2 43:4 66:10 67:22 117:19 171:25 <b>wednesday</b> (1) 198:20 <b>week</b> (9) 40:23 65:11 132:6,11 140:17,17,21 151:8,8 <b>weeks</b> (2) 133:17 151:9 <b>welcome</b> (4) 1:3 52:25 107:3 154:8 <b>welded</b> (2) 89:1,3 <b>went</b> (8) 12:25 19:11 29:10 31:7 44:25 150:18 156:17 187:18 <b>werent</b> (26) 25:3 34:3 40:6 44:6 50:21 51:23 57:11 62:10 69:14 72:8 76:19 83:9 108:3 134:3 143:20,23 144:18 151:7,10,13 169:3 173:10 182:8,15 185:10 187:14 <b>weve</b> (31) 28:11 34:20,20,20 63:15 66:3,4 94:20 96:25 97:13,22 101:23 104:6 115:23 124:7 135:14,15 138:9 146:5,7,22 147:1 148:1 160:18 167:1 177:24 187:6,7,11 191:10 194:5
--	---	---	---	--	--	--	---	---

whatever (4) 103:3 109:5  
147:20 178:15  
whats (6) 27:3,23 28:11 29:6  
85:25 90:15  
whenever (1) 4:2  
whereas (1) 71:17  
wherever (2) 166:4 168:8  
whilst (1) 101:9  
white (5) 145:6 183:15,25  
195:11 197:17  
whoever (5) 158:1 169:3  
171:22 179:16 186:22  
whole (9) 35:11 37:15 89:2  
93:13 99:4 114:9 167:8  
187:4,13  
wholeheartedly (1) 108:21  
wholly (3) 95:11 123:4  
194:19  
whom (5) 82:13 96:11  
114:20 139:14 179:16  
whos (1) 151:16  
whose (1) 181:8  
widely (1) 18:13  
widths (1) 68:11  
wing (5) 94:9 119:9 140:4  
177:16,21  
wished (1) 6:3  
withdrawn (1) 54:12  
witness (45) 1:8,21  
2:1,6,12,16,22 3:11,20  
4:5,10 5:13,18,24 9:14  
11:10 15:17 52:18,21 53:4  
73:3 82:5 106:15,18,21,24  
107:7,10 113:5 116:21  
117:6 138:18 147:13  
153:25 154:3,12,16,24  
163:23 170:9 191:21  
198:5,8,12,16  
witness (1) 1:12  
wonder (3) 84:7 141:9  
190:10  
wondering (4) 99:17 100:1,1  
111:17  
wont (4) 3:7 100:8 106:18  
153:16  
wording (1) 174:3  
work (40) 7:12  
10:4,7,9,12,17,20,21  
13:23 14:2,24 16:22,22  
17:7,11,18 18:1,7,18 19:11  
20:6 23:14 26:22 29:17  
30:17,19 31:1 39:3 43:7  
44:3 48:9 50:11 100:19  
108:20 120:8,16 134:12,19  
135:5  
worked (8) 13:10,19 30:15  
40:23 41:16 50:5 129:1  
158:11  
working (15) 12:11 16:24  
24:6 27:6,7,8,12 33:3  
38:15 73:11 153:10 155:5  
158:8 191:25  
works (2) 39:13 134:15  
workstreams (1) 15:4  
world (1) 33:9  
worlds (1) 197:13  
worried (1) 157:22  
worse (6) 89:13 90:22 91:1  
98:18 101:10,23  
worthwhile (1) 19:9  
wouldnt (41) 30:7 33:11,17  
42:16 44:8 58:8,8  
59:4,7,22 62:25 67:23  
69:15 72:19 79:5 87:13  
92:16 98:24,24 99:9 103:5  
104:3 105:1,12,18,22  
129:12,13 148:20 151:15  
176:25 177:7 179:4,22  
184:17,21,25 186:7,24  
187:5 195:1  
write (3) 110:18 130:12  
195:8  
writing (16) 42:22,24  
70:2,3,4 114:21,24 119:2  
141:16 147:5 167:18 181:5  
189:18,19,21 190:6

written (8) 9:21 17:19 41:20  
51:23 93:15 134:22 175:10  
193:13  
wrong (6) 87:5,25 102:4,6  
106:1 176:8  
wrote (6) 6:2 151:25 170:2  
174:20 175:8 182:11  

---

**X**

---

  
x (5) 46:4 143:3 145:4,4  
193:15  

---

**Y**

---

  
y (1) 46:4  
yeah (65) 13:12 14:1,10 23:1  
24:21,22 25:7,15 27:2  
29:23,24 35:1,2 37:20  
40:15 44:5,17 45:1 47:22  
51:8 54:15 57:19 58:17  
61:22 63:23 67:21 74:8,22  
75:22 76:3 79:2,12 87:5  
89:1,3 90:20 92:1,9,15,22  
98:11,11 101:2 102:22  
108:2 109:11 112:8,10  
122:4 138:16,16 145:24  
150:25 152:5,19 162:19  
167:23 169:16 175:8  
179:21 185:7 186:5 190:11  
195:7 197:24  
year (8) 10:12,21 17:11  
21:12 26:23 36:10 64:11  
157:3  
years (6) 29:10 30:22 44:17  
79:9 98:16 103:12  
yet (6) 126:3,9 128:13  
173:10,13 196:5  
youd (2) 70:21 79:8  
youll (2) 115:23 141:18  
youre (65) 2:10,11 9:3 15:10  
23:16 26:2 33:20,22 47:9  
48:6 54:9 60:3,18 85:13  
86:11 87:14 89:8,17,21  
90:2,4,6,9,12,14 92:2,3  
93:12,18,24 97:18 99:23  
100:2 109:8,13 110:16  
111:15 119:4 120:22,24  
121:15 122:10 130:15  
137:18 138:23 139:23  
144:14 147:4,6,25  
149:3,10,11 151:11 152:19  
154:14,18 162:19 163:7  
166:24 167:10 172:3,25  
185:2 191:23  
yours (2) 25:2 119:1  
youve (21) 10:22 26:2 33:21  
68:3 72:10 85:7,9 86:8,9  
89:4,6,6 90:18 91:11 98:18  
118:7,9 124:8 151:15  
152:8 187:9  

---

**0**

---

  
0 (1) 71:16  
01 (1) 74:15  
0120 (1) 83:18  
0124 (1) 83:19  
0138 (1) 83:18  
0235 (1) 88:16  
0239 (1) 88:17  
0246 (1) 88:16  
0258 (2) 85:18,20  
0302 (2) 85:19,21  

---

**1**

---

  
1 (19) 6:1 9:14 30:16 31:15  
60:2 65:6 85:6 86:4 88:25  
119:4,7,8 133:18 134:16  
140:3 141:10 181:12  
183:18 199:3  
10 (5) 66:23 68:9  
198:7,14,19  
100 (2) 71:16 106:25  
1000 (1) 1:2  
10h (1) 164:17  
11 (2) 56:10 65:20

1100 (1) 77:14  
1115 (1) 3:17  
1120 (1) 52:22  
113 (1) 74:15  
1135 (2) 52:15,24  
12 (3) 8:3 104:11 145:13  
1200mm (1) 145:4  
125 (1) 37:1  
125mm (1) 143:3  
12mil (4) 103:20 147:19  
148:4,4  
12millimetre (2) 146:10  
149:9  
12mm (6) 101:14,17 103:24  
136:15 145:4 146:3  
13 (2) 11:10 14:17  
135 (33) 31:5 32:9 36:25  
37:14,16 38:2,7 39:2,9  
40:1,24 41:9 42:20  
43:18,21 45:3,7,9 71:6,7  
80:25 119:21 121:19,24  
122:1,5,21 123:2  
125:9,13,18,25 126:11  
13501 (1) 22:25  
14 (13) 15:17 73:2 82:9,18  
83:2 95:6 96:16 131:18,24  
132:23 134:7 139:13  
142:12  
14001 (1) 63:8  
14022014 (1) 77:14  
145 (2) 109:22 112:24  
146 (6) 111:13  
112:13,19,20,22 113:1  
147 (3) 80:6 111:8,12  
148 (3) 73:4,7 75:2  
149 (2) 73:7 74:15  
15 (8) 5:14,21 119:22 121:20  
122:3 145:4 146:3 155:24  
152 (1) 79:18  
1582 (1) 164:9  
16 (1) 18:25  
17 (6) 113:10 114:16 119:13  
120:3 124:7 126:4  
17025 (3) 24:5,22 62:18  
172 (1) 82:15  
173 (1) 82:21  
174 (1) 6:6  
17th (1) 128:12  
18 (1) 54:7  
18th (1) 65:12  
19 (1) 124:6  
192 (1) 92:24  
194 (1) 92:25  
196 (5) 110:15,20 111:16  
112:11,18  
19961997 (1) 39:17  
1997 (4) 9:12 33:2 34:17  
39:17  
1998 (1) 11:5  
1999 (9) 30:15,22 31:21,24  
32:10,16,18,22 33:3  

---

**2**

---

  
2 (25) 30:17,17 60:2  
84:10,17 88:24 93:21 94:3  
106:1,14,19,23 107:13  
133:5 134:17,24 136:20  
137:16 139:12 141:19  
143:3 155:21 173:9 184:23  
188:15  
20 (1) 43:11  
200 (2) 107:2 131:11  
2000 (4) 14:10 31:22 32:5  
71:15  
2000and (2) 39:16 43:1  
2002 (3) 30:20,23 37:19  
2003 (2) 42:20 45:2  
2004 (3) 11:12 12:3 47:20  
2005 (4) 13:20 14:12 103:15  
104:21  
2006 (7) 9:15 37:2,14  
38:1,8,12,24  
20062007 (1) 37:7  
2007 (1) 37:3  
2009 (1) 16:17  
201 (2) 93:17,25

2010 (2) 9:16 16:18  
2012 (1) 10:23  
2013 (11) 10:23 45:2  
58:23,24 60:16,20 64:8  
65:8 66:23 155:19,24  
2014 (51) 6:9 14:2 64:3  
68:6,9 72:5 73:1,2 79:8  
82:9,18 93:21 94:3 95:6  
96:16 109:19 113:10  
119:13 120:3 124:6 125:17  
131:9,18,24 133:2,6 134:7  
135:12 139:5,12,13,21  
141:24 142:12,22 144:24  
146:19 148:2,9 153:14  
154:22 155:8 156:13,21  
158:13 172:9 176:4,18  
181:4,16 186:14  
2015 (2) 13:21 14:19  
201516 (1) 49:25  
2016 (1) 49:25  
2017 (1) 19:1  
2018 (2) 19:10,18  
2019 (3) 5:14,21 25:13  
202 (1) 95:2  
2020 (5) 6:1 25:13,14 26:25  
27:1  
2021 (2) 1:1 198:20  
203 (1) 96:7  
21st (1) 139:5  
22 (1) 30:12  
23 (1) 1:1  
24 (6) 135:12 142:16,17  
143:3,3 198:20  
2400mm (1) 145:4  
247 (1) 151:10  
25 (7) 119:19 120:7 121:9  
122:23 129:5,18,23  
250 (1) 176:4  
2500 (2) 133:19 134:18  
251 (1) 7:15  
252 (2) 145:6 191:12  
256 (1) 154:25  
25k (1) 133:8  
26 (1) 53:10  
260mm (1) 71:16  
261 (1) 176:4  
267 (6) 8:7 164:15,16 165:18  
169:19 182:24  
268 (4) 165:18 167:9,22  
168:3  
269 (1) 191:22  
28 (2) 133:2 176:18  
284 (3) 173:19,23 178:7  
285 (3) 173:19 174:13 178:8  
287 (1) 139:10  
289 (1) 138:21  
2metre (1) 71:15  
2millimetre (1) 188:21  

---

**3**

---

  
3 (15) 9:14 15:17 77:15 86:3  
91:7,9 99:13 100:24  
135:16 142:4 143:17  
155:17 156:4 191:15,18  
30 (6) 119:19 121:8 122:22  
123:4 126:17 189:17  
303 (1) 61:12  
304 (1) 61:16  
31 (5) 139:21 140:14 144:24  
145:19,20  
310 (1) 153:20  
312 (1) 154:5  
315 (1) 3:17  
330 (3) 153:21,23 154:7  
35 (2) 80:7 109:21  
36 (1) 73:3  
37 (1) 79:18  
38 (2) 47:23 48:23  
39 (2) 47:23 49:11  

---

**4**

---

  
4 (11) 43:12 64:8 77:21  
84:18 99:15,24 141:24  
149:10,12 173:8 199:5

41 (5) 6:6 54:24,25 55:25  
82:5  
42 (1) 48:15  
424431 (1) 166:8  
435 (1) 198:18  
46 (1) 48:15  
47 (1) 110:14  
48 (1) 131:12  
49 (1) 93:17  

---

**5**

---

  
5 (4) 30:13 68:23 70:19  
119:4  
50 (2) 56:9 57:3  
5000 (2) 82:9 138:25  
529 (1) 101:7  
531 (2) 136:11 138:2  
581 (3) 176:3,9,12  
582 (3) 176:3,9,12  
583 (2) 176:3,12  
596 (2) 176:4,13  
5m (2) 70:14 71:22  

---

**6**

---

  
6 (12) 8:3 68:21  
100:19,21,23,24 142:14  
145:12 146:3 147:8 148:2  
184:11  
600 (3) 119:22 121:19 122:2  
61 (2) 7:15 191:12  
62 (1) 154:23  
65 (2) 8:7 164:14  
66 (1) 191:21  
69 (2) 173:17 178:8  
6mil (2) 103:20 152:8  
6millimetre (17) 102:8 103:9  
104:15,23 107:21 108:12  
146:11,24 147:17,22  
148:8,13 149:15 153:3  
168:18 184:5 196:23  
6mm (4) 101:18 104:7  
107:18 146:4  

---

**7**

---

  
7 (4) 142:22 146:8 184:12  
189:2  
70 (1) 138:20  
7th (1) 146:4  

---

**8**

---

  
8 (6) 65:8 68:6 105:11,17  
119:9 194:8  
83 (1) 5:20  
838 (1) 65:7  
8414 (49) 13:24 14:3 17:25  
22:23 30:14,16,16,17,21  
31:8 32:9 33:3,4,17  
34:4,6,23 35:11  
37:6,10,11,14,17 38:6  
39:1,9 40:1,24 41:9 42:5  
43:21 45:4,14 64:11 65:2  
71:9,17,20,21 72:7  
82:8,11,23 114:10 118:13  
134:16,16 164:11 193:14  
84141 (1) 30:16  
84142 (3) 43:4 122:25  
135:22  
85 (2) 188:17 189:3  
859 (1) 189:3  
8a (1) 82:7  
8millimetre (1) 195:12  
8mm (3) 101:15 103:24  
191:16  
8q (1) 93:19  

---

**9**

---

  
9 (2) 54:25 56:1  
9001 (11) 62:4,6,12,15,16,24  
63:5,6,8,12,16  
9by9 (1) 16:11