

OPUS 2

INTERNATIONAL

Grenfell Tower Inquiry

Day 24

July 21, 2020

Opus 2 International - Official Court Reporters

Phone: +44 (0)20 3008 5900

Email: transcripts@opus2.com

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

1 Tuesday, 21 July 2020
2 (10.00 am)
3 SIR MARTIN MOORE-BICK: Good morning, everyone. Welcome to
4 today's hearing. Today we're going to hear more
5 evidence from Mr Simon Lawrence of Rydon.
6 So would you ask Mr Lawrence to come in, please.
7 MR SIMON LAWRENCE (continued)
8 SIR MARTIN MOORE-BICK: Good morning, Mr Lawrence.
9 THE WITNESS: Good morning.
10 SIR MARTIN MOORE-BICK: Are you all set to carry on?
11 THE WITNESS: Yes.
12 SIR MARTIN MOORE-BICK: Good, thank you.
13 Yes, Mr Millett.
14 Questions from COUNSEL TO THE INQUIRY (continued)
15 MR MILLETT: Mr Chairman, thank you.
16 Mr Lawrence, good morning.
17 A. Good morning.
18 Q. Yesterday, when we finished for the day, we had been
19 looking at the email at {RYD00003932}, which was sent by
20 Mark Harris to Debbie French, and then her response on
21 23 April, which included the BBA certificate, and it's
22 up there on the screen for you to see just as a reminder
23 of where we were.
24 I want to ask you now some questions about the BBA
25 certificate itself. Can I ask you to look at it. It's

1

1 at {HAR00000934}. Just take a moment to look at that
2 page.
3 Do you remember reading that document at this time,
4 23 April 2014?
5 A. I've seen the document throughout the construction
6 process, so yes, I'd seen it, yes.
7 Q. You'd seen it?
8 A. Whether it was that actual date or not, I don't know,
9 but ...
10 Q. I see. Do you think you saw it before 23 April 2014?
11 A. I couldn't say. I couldn't say whether it was before or
12 after.
13 Q. When you did get it, did you read it, do you think?
14 A. Not cover to cover, no.
15 Q. Not cover to cover, right. Did you read it cover to
16 cover at any point during the construction process?
17 A. No.
18 Q. No.
19 A. No.
20 Q. Can I ask you to turn to {RYD00003953}.
21 After Mark Harris had received the email from
22 Debbie French and forwarded it to you, you in turn sent
23 on to Mr Sounes, the same day at 17.16, what you had
24 received from Reynobond:
25 "Bruce

2

1 "Please see attached from Reynobond (via Harley).
2 I'll catch up with you tomorrow."
3 Can we be clear from that that both you and
4 Mr Sounes saw the BBA certificate for the Reynobond
5 PE 55 ACM panels?
6 A. Well, I assume so.
7 Q. It looks like it, doesn't it?
8 A. I can only speak for myself, but yeah.
9 Q. Can we then turn to {RYD00003964} and look at the bottom
10 of page 1 on that page.
11 This is an email from you, same day, 23 April 2014,
12 at 18.22 to Bruce Sounes and Mark Harris, and you say
13 you have:
14 "... been through the info sent to us by Reynobond
15 (which I forwarded separately today with pdf warranties,
16 colour charts, etc) and cross checked it with and cross
17 checked it with your email below. I thought I'd better
18 clarify the costings against colour ranges, if only for
19 my own benefit as I'm getting confused with reference
20 numbers."
21 If you look at the email below on page 2
22 {RYD00003964/2}, that shows Mr Sounes setting out the
23 day before, 22 April, the various different types of
24 rainscreen panel which could be used at Grenfell. You
25 can see there he says:

3

1 "Hi Simon
2 "For some reason both you and we have overlooked the
3 Metallics."
4 We went through this yesterday, because you will
5 notice that it includes the smoke silver, which was
6 eventually used.
7 A. Yes.
8 Q. When you say you had been through the documents, can we
9 take it you had been through the BBA certificate
10 relating to these panels?
11 A. Not in any -- I would have had a general look but
12 I wouldn't have studied each section, if that's what
13 you're suggesting, and I'm not sure I could understand
14 all of the items within a BBA certificate.
15 Q. Right.
16 You say that you cross-checked it with the
17 information given to you by Mr Sounes. What did that
18 cross-check actually involve?
19 A. Without again seeing the documents, I don't recall that.
20 From memory, I would assume it was relating to colours,
21 et cetera, et cetera. I don't really recall.
22 Q. Right.
23 What did you understand this certificate was for?
24 A. It's a ... I was going to say an internationally
25 recognised; a UK recognised certification for products.

4

1 Q. Certification for what?

2 A. On various testing regimes on products.

3 Q. Right.

4 Why did you think Debbie French was sending it to

5 you, or to Harley?

6 A. I didn't really think about it, to be fair.

7 Q. Right.

8 A. It was just ... I would guess, and I don't actually

9 recall my thoughts at the time, but I would guess that

10 it was to prove that it had a BBA certificate and that

11 it had been tested and was appropriate.

12 Q. Right. Well, we'll come back to that answer in

13 a moment, I think, but can I just pick up something with

14 you in the Rydon company statement, {RYD00094236/71},

15 please, paragraph 159, it says:

16 "As and when designs were issued for approval from

17 specialist subcontractors (such as Harley's design

18 drawings for the build-up of the façade or the British

19 Board of Agrément ('BBA') certificates from the

20 suppliers) these were passed to Studio E to review,

21 approve or reject and, when appropriate, submit them to

22 RBKC Building Control."

23 The words there are used "passed to Studio E to

24 review, approve or reject and, when appropriate, submit

25 them to RBKC Building Control".

5

1 Do you accept that this email we're looking at

2 suggests that you didn't simply pass the BBA certificate

3 to Studio E; you went through it and you cross-checked

4 it against the information that Mr Sounes had given you?

5 A. No, I think you're reading too much into that email, to

6 be fair, I think that's a turn of phrase. I don't think

7 I -- in fact, I know I didn't line by line go through

8 everything contained within the BBA certificate,

9 cross-checked -- and, again, without seeing the whole

10 trail, I would assume it's relating to colours and

11 whether the BBA certificate is -- you know, it's an ACM

12 panel rather than we had been sent something completely

13 different. But I would not be in a position to

14 technically critique the BBA certificate.

15 Q. Right.

16 Let's look at the certificate again, {HAR00000934},

17 please, and you can see a quarter of the way down, under

18 "Agrément certification includes", first bullet point:

19 "Factors relating to compliance with Building

20 Regulations where applicable."

21 So can we take it from that that you saw that and

22 understood that that was the purpose of the certificate?

23 A. I understood --

24 Q. Or one purpose.

25 A. I understood the general purpose of the certificate

6

1 being an official test of a product. Whether I would

2 have read that particular bullet point and thought about

3 that, I don't -- I doubt it.

4 Q. Right.

5 Halfway down the page it says, "Key factors

6 assessed", and then the third factor is:

7 "Behaviour in relation to fire - in relation to the

8 Building Regulations for reaction to fire, the panels

9 may be regarded as having a Class 0 surface in England

10 and Wales, and a 'low risk' material in Scotland (see

11 section 6)."

12 Did you read that statement, do you think?

13 A. Again, I may have done. I may have done. I mean, for

14 me, ACM panels, my limited understanding was that -- and

15 this is from previous jobs -- the panels needed to

16 achieve a class 0. So had I have read that -- and I may

17 well have done, I don't recall -- then that definitely

18 wouldn't have jumped out as any issues.

19 Q. Right.

20 Did you focus on or understand the words "the panels

21 may be regarded"? Did you have any particular

22 understanding --

23 A. I wouldn't have read it -- I wouldn't have scrutinised

24 it as we are now, without a shadow of a doubt, no.

25 Q. You have given us a little bit of insight into your

7

1 understanding of class 0. What did you understand the

2 term to class 0 to mean at this time?

3 A. It's relating to the surface spread of flame and the

4 fact that the product shouldn't promote the surface

5 spread of flame.

6 Q. Right. If I were to ask you: what does class 0 mean or

7 involve, could you enlighten us further?

8 A. As in the testing of?

9 Q. As in anything you knew about class 0 at the time.

10 A. That's the sum of what I knew.

11 Q. Right.

12 Was it a term you had heard on other projects in

13 relation to fire performance?

14 A. Yes, in particular paint surfaces in communal areas and

15 on cladding on the previous projects that I had worked

16 on.

17 Q. Did you know at the time what tests have to be carried

18 out in order for a product to obtain a class 0

19 performance?

20 A. No.

21 Q. Do you know now?

22 A. No.

23 Q. Right.

24 When looking at the certificate, and the reference

25 to the word "panels", as you can see in the very first

8

1 dark blue strip at the top, "Product sheet 1, Reynobond
 2 Architecture Wall Cladding Panels", did you note that
 3 the certificate was said to be addressing the
 4 Building Regulations for reaction to fire specifically?
 5 A. At the moment I can't see -- where do you mean on the
 6 document, sorry?
 7 Q. Well, picking it up in the middle of the page under "Key
 8 factors assessed", which we looked at a moment ago,
 9 "Behaviour in relation to fire", it says:
 10 "... the panels may be regarded as having a Class 0
 11 surface ..."
 12 Did you pick up the word "panels"?
 13 A. Probably not. I probably would have assumed it was
 14 relating to the panels, but I wouldn't have --
 15 Q. No.
 16 A. I didn't look in that much depth and scrutinise it like
 17 we are now, so --
 18 Q. It sounds like an odd question, Mr Lawrence, there's a
 19 reason for it, I appreciate.
 20 Let's go to page 3 {HAR00000934/3}, figure 1,
 21 please, at the bottom of the page there. That's where
 22 we see "Reynobond Architecture panels and typical fixing
 23 systems".
 24 Did you, when looking at the certificate, look at
 25 figure 1?

9

1 A. I don't recall.
 2 Q. Would it follow that you didn't note the distinction
 3 between the two different systems, riveted and cassette
 4 systems, under the rubric "Reynobond Architecture
 5 panels"?
 6 A. Sorry, I can see there's two different systems on there
 7 now. Sorry, what was the question?
 8 Q. Let me try it a different way: did you think that both
 9 systems were panels and therefore covered by the
 10 certificate?
 11 A. If -- and I don't recall going through it in this much
 12 detail, but if -- without knowing what's happened,
 13 I would assume now, if I was reading that, that that
 14 applied to both of those, face-fixed and cassette,
 15 because they both have a label that says "Reynobond
 16 panel" on them.
 17 Q. Yes.
 18 A. So, yes, I would assume that if --
 19 Q. Did anything at the time in this certificate lead you to
 20 think that the riveted system might have a different
 21 fire certification from the cassette system?
 22 A. No.
 23 Q. Were you ever aware that face-fixed and cassette systems
 24 in fact have different fire classifications with
 25 different test results?

10

1 A. No.
 2 Q. So you weren't aware that in Arconic's Euro test in
 3 2005, the fire performance for the cassette had achieved
 4 a class E Euro score?
 5 A. No, I --
 6 Q. Let's look --
 7 A. Sorry, I think we mentioned yesterday that I had only
 8 ever had experience of the flat riveted panels.
 9 Q. Thank you, that's right.
 10 Now, can we look at page 3, third paragraph down,
 11 under "General", so about a fifth of the way down the
 12 page. Do you see it says:
 13 "It is important for designers, planners,
 14 contractors and/or installers to ensure that the
 15 installation of the cladding is in accordance with the
 16 Certificate holder's instructions and the information
 17 given in this Certificate."
 18 Do you remember reading that?
 19 A. No, I don't remember the specific wording of the
 20 certificate, no.
 21 Q. Right.
 22 Did you know generally that, as the D&B contractor,
 23 you had to ensure that the installation of the cladding
 24 was in accordance with the certificate holder's
 25 instructions and the information given in this

11

1 certificate?
 2 A. I would expect that, as a general principle.
 3 Q. Did you ever discuss with Studio E their role in making
 4 sure that that happened?
 5 A. No.
 6 Q. Did you ever investigate within Rydon how Rydon was
 7 going to make that happen?
 8 A. We were going to make that happen by appointing
 9 a specialist subcontractor.
 10 Q. Right.
 11 A little bit below the statement we can see that,
 12 under "Technical Specification", paragraph 1,
 13 "Description", it says:
 14 "The Reynobond Architecture Wall Cladding Panels
 15 comprise two 0.5 mm thick aluminium alloy sheets ..."
 16 And it goes on to describe what those are. Do you
 17 see? It goes on:
 18 "The panels are available either plain edged
 19 (riveted system) or flanged (cassette system) to suit
 20 architectural requirements (see Figure 1). A Duragloss
 21 or PVDF coating available in various colours protects
 22 the exposed face. A polyester primer protects the
 23 unexposed face. The products are also available in
 24 a fire-retardant grade (FR)."
 25 Did you appreciate at the time that whether or not

12

1 the cladding panels were manufactured in rivet or in
 2 cassette form may have made a difference to the fire
 3 performance for the purposes of this certificate?
 4 A. No.
 5 Q. Right.
 6 So does it follow that, assuming there was
 7 a difference, you couldn't have told that from the
 8 certificate? Or you didn't, you didn't appreciate it?
 9 A. Without re-reading it fully now, I don't think it's --
 10 Q. Right.
 11 A. Well, the certificate we've just seen, I don't think
 12 it's clear and I didn't know at the time.
 13 Q. Did you pick up from the certificate that the panels
 14 were available with a polyethylene core as a standard
 15 product, but also available with a fire retardant core?
 16 A. No, I didn't know about any other core to any other ACM
 17 panel until after the disaster.
 18 Q. Did you have any understanding about what polyethylene
 19 was?
 20 A. I didn't have any -- not any thought about it, no.
 21 Q. So does it follow that you wouldn't have had any
 22 thoughts about its fire performance?
 23 A. No.
 24 Q. Did you ever ask or check?
 25 A. No.

13

1 Q. In order to perform Rydon's obligations under the
 2 contract to make sure that no product was used which
 3 contravened the Building Regulations, as we've seen on
 4 the first day of your evidence, did you give any
 5 consideration to the fact that the BBA certificate
 6 details that claddings were available in an FR core?
 7 A. No, because I hadn't experienced it before and I hadn't
 8 noted that or seen that or read that. My experience has
 9 always come from the previous jobs that have been
 10 carried out with Rydon.
 11 Q. Right.
 12 A. And to the best of my knowledge, they were all exactly
 13 the same core.
 14 Q. I see.
 15 A. I didn't know there was any more variations to the core
 16 than what was black, effectively, because it was --
 17 which I believe is the PE.
 18 Q. Can I ask you to go to page 5 {HAR00000934/5}, please,
 19 paragraph 6.1. Here, under the heading "Behaviour in
 20 relation to fire" -- and there is quite a lot of detail
 21 there -- at 6.1 it says:
 22 "A standard sample of the product, with a grey/green
 23 Duragloss 5000 coating, when tested for reaction to
 24 fire, achieved a classification of B-s2, d0 in
 25 accordance with EN 13501-1:2002. A fire retardant

14

1 sample of the product, with a gold-coloured Duragloss
 2 finish, when tested for reaction to fire, achieved a
 3 classification B-s1, d0 in accordance with
 4 EN 13501:2002."
 5 Did you read that statement, do you remember?
 6 A. I don't recall.
 7 Q. Can you look at paragraph 6.2, then, below that:
 8 "A fire retardant sample of the product, with a
 9 metallic grey PVDF finish, when tested in accordance
 10 with BS 476-6:1989, achieved a fire propagation index
 11 (I) of 0 and, when tested in accordance with BS
 12 476-7:1997, achieved a Class 1 surface spread of flame."
 13 Do you remember reading that statement?
 14 A. No.
 15 Q. At 6.3:
 16 "As a consequence of sections 6.1 and 6.2, the
 17 products may be regarded as having a Class 0 surface in
 18 relation to the Approved Document B of The Building
 19 Regulations 2000 (as amended) ..."
 20 Et cetera.
 21 Then the last sentence says:
 22 "The unexposed side of the products may also be
 23 regarded as having a class 0 surface."
 24 Did you read that paragraph at the time?
 25 A. No, I don't recall that either.

15

1 Q. So if I were to ask you whether you understood that the
 2 statement of class 0 classification referred to the fire
 3 retardant sample or the PE standard or both, could you
 4 help me?
 5 A. Not without interpreting it now.
 6 Q. Right.
 7 Paragraph 6.4, then, I think we can take this
 8 quickly:
 9 "These performances may not be achieved by other
 10 colours of the product and the designations of a
 11 particular colour should be confirmed by:
 12 "England and Wales - Test or assessment in
 13 accordance with Approved Document B, Appendix A,
 14 Clause 1."
 15 Did you read that at the time?
 16 A. Not that I recall.
 17 Q. Would it follow that you didn't read paragraph 6.5
 18 either?
 19 A. No, I think it's fair to say that I didn't study the
 20 document.
 21 Q. Right.
 22 A. And if I had have done, I'm not sure I could have
 23 understood all the fire classifications anyway.
 24 Q. Right.
 25 Were you familiar at all with the guidance referred

16

1 to in Approved Document B?

2 A. Not particularly, no.

3 Q. Not particularly? Well, let's see if I can ask you

4 a specific question.

5 Can I ask you to look at Approved Document B, which

6 is [CGL00000224/119]. This is appendix A, "Performance

7 of materials, products and structures". There is a long

8 introduction about performance standards, and this is

9 of course Approved Document B, so this is about fire.

10 I would like you to look, please, with me at note 2:

11 "Any test evidence used to substantiate the fire

12 resistance rating of a construction should be carefully

13 checked to ensure that it demonstrates compliance that

14 is adequate and applicable to the intended use. Small

15 differences in detail (such as fixing method, joints,

16 dimensions and the introduction of insulation materials

17 etc.) may significantly affect the rating."

18 Were you familiar with that particular guidance,

19 even as a matter of principle if not the precise

20 wording?

21 A. As a matter of principle, you would expect the -- you

22 would expect the products to be suitable, you would

23 expect the products to need to be installed as per the

24 manufacturer's recommendations. But that's as -- that's

25 as far as my knowledge would have extended.

17

1 Q. Right. I'm not sure that's quite an answer. My

2 question was: were you familiar with the guidance in

3 note 2, at least in principle if not the precise words?

4 A. Well, the principle is what I think I've just explained,

5 but no, I wasn't familiar -- I haven't read Approved

6 Document B.

7 Q. Right, okay.

8 Did you ever ask Harley to check the test evidence

9 on which the BBA certificate was based, given that they

10 were the specialist subcontractors on whom you were

11 relying?

12 A. I didn't specifically ask them, no, I don't believe.

13 Q. Is there a reason why not?

14 A. Well, I would have thought, employing a specialist

15 subcontractor that has the manufacturer's approval,

16 backing, et cetera, that we would be getting the correct

17 products. So ... yeah.

18 Q. Okay.

19 I mean, we've already seen that Rydon was obliged to

20 exercise reasonable skill and care to ensure that no

21 product was used on the refurbishment of the building

22 which didn't conform with British or European standards,

23 or, where there was no standard, which didn't conform

24 with the British Board of Agrément certificate. We've

25 seen that.

18

1 So my question is: given your obligation to the TMO

2 in those terms, why didn't you ask Harley to make sure

3 that these panels did conform with British or European

4 standards and/or with the British Board of Agrément

5 certificate?

6 A. I don't think that would be normal, to ask them

7 a question quite as direct as that. I think by the fact

8 that you have employed a specialist subcontractor, as

9 we've said before, with, you would hope, the specialist

10 knowledge -- or more than hope; have got the specialist

11 knowledge, with the backing of the manufacturer, it

12 would be a given that they wouldn't be providing

13 something that wasn't suitable.

14 Q. How did Rydon manage the risk that Harley wouldn't check

15 the test certificate and make sure that the product was

16 compliant?

17 A. Bearing in mind that we'd had several projects and

18 a total of six tower blocks that we had done previously

19 with Harleys and worked with them for the last -- since

20 2006/2007, I think we were confident in their ability to

21 do what they were -- the services they were offering.

22 Q. So does it come to this, Mr Lawrence: that, as Rydon,

23 Rydon was making a solemn and binding promise to the

24 TMO, and taking the risk of putting itself in breach of

25 that, based on its trust it had in Harley?

19

1 A. The experience it had in Harley, believing that they

2 were competent.

3 Q. Right.

4 Do you accept, in the light of Rydon's contractual

5 obligations, that the wording of the BBA certificate

6 that you were sent should have alerted you to the fact

7 that the panels were available with different cores

8 which had substantially different fire performance?

9 A. I think I would -- as I'm not technically proficient to

10 understand the BBA certificate, I think we need to rely

11 on third parties to be making us aware of that,

12 including the manufacturers, Harleys, and Studio E if

13 they were aware.

14 Q. Right.

15 Do you accept that you should have been alert to the

16 fact that the fire performance of a wall incorporating

17 these panels couldn't be ascertained merely by reference

18 to this certificate?

19 A. I should have been alerted by our specialist

20 subcontractor, manufacturers or the design team.

21 Q. And the same would follow in relation to the differences

22 of fire performance --

23 A. Yes.

24 Q. -- from colour to colour?

25 A. Yes.

20

1 Q. Right. And any difference, I would suggest, between
 2 rivet system and cassette system.
 3 A. Yes.
 4 Q. Now, you sent this BBA certificate to Mr Sounes, as
 5 we've seen. Can I just take you back to that email.
 6 It's {RYD00003953}, 23 April 2014. We looked at that
 7 a moment ago, or perhaps a little bit more than a moment
 8 ago now. In the second sentence you say:
 9 "I'll catch up with you tomorrow."
 10 Do you remember whether you did catch up with him on
 11 24 April 2014?
 12 A. I may well have done. I don't recall.
 13 Q. You don't recall? You don't recall a conversation?
 14 A. At that time we were looking at multiple different types
 15 of colours, you know, the mock-up that was put on the
 16 building, et cetera, et cetera, with the planners. So
 17 I may well have done, but ...
 18 Q. Do you remember whether you discussed the BBA
 19 certificate specifically?
 20 A. I don't recall.
 21 Q. Did you discuss fire performance of the ACM panels
 22 specifically, do you remember?
 23 A. No.
 24 Q. Did you ever have a conversation with Mr Sounes about
 25 the fire safety performance of the ACM panels, the

21

1 subject of this certificate?
 2 A. No, I don't believe so.
 3 Q. Did you ever have a conversation with anybody about the
 4 fire performance of these panels?
 5 A. Not specifically, no.
 6 Q. Right.
 7 Can I ask you to turn, please, to {RYD00004085},
 8 I just want to ask you a question or two about zinc at
 9 this point in the story.
 10 This is an email from Mike Albiston of Harley to you
 11 dated 30 April 2014, and the subject is:
 12 "Grenfell Tower, London - Nedzink Rainscreen
 13 Cladding."
 14 There are some attachments, including a Proteus HR
 15 brochure and various different guarantees, as well as
 16 an HR CWCT document.
 17 "Hi Simon
 18 "Please find attached the following information from
 19 KME for the Proteus Rainscreen cladding ..."
 20 You have three bullet points, and the third one is:
 21 "CWCT test document from Taywood Engineering. The
 22 system is tested to BRE Digest 346, Part 7 for wind ..."
 23 Et cetera. You have various other test data there
 24 for other things as well, but not including fire:
 25 "Hope this is of some use."

22

1 Had you asked Mr Albiston to send you that
 2 information?
 3 A. I don't recall specifically asking for it. I may have
 4 done. I remember at the time we were -- there was
 5 a discussion about comparing ACM and zinc in relation to
 6 durability and lifespan, and that was to do with the --
 7 going back to the planners with the proposal of ACM as
 8 opposed to zinc. So it was a fact-finding relating to
 9 the durability more than -- well, about the durability,
 10 really --
 11 Q. I see.
 12 A. -- as a factor.
 13 Q. We see that you had already undertaken significant work
 14 before this time in order to work out the value
 15 engineering options, comparing zinc with ACM; yes?
 16 A. Significant work as in we've spoken to Harleys and they
 17 have provided us with costs, yes.
 18 Q. Yes.
 19 Was zinc still being considered by Rydon at this
 20 stage?
 21 A. I don't believe so, because it was outside the client's
 22 budget, and that wasn't what they were intending to do.
 23 But what -- the intention was to be able to have
 24 a reasoned discussion with the planners, who Bruce felt
 25 were -- and I believe Bruce himself was -- keen on using

23

1 the ... keen on using zinc.
 2 Q. So was zinc still in play?
 3 A. It was in play because it was still a planning
 4 application based on zinc, so it was in play, but not --
 5 it was -- in my understanding at the time, it was never
 6 going to be an option once they got the costs back.
 7 Q. I follow, all right.
 8 Can we go back, then, to the notes of the induction
 9 meeting on 1 April 2014, and this is {RYD00003683}. We
 10 looked at this yesterday. 1 April 2014. Can I ask you
 11 to turn to page 2 {RYD00003683/2}, item 2.1. This is
 12 under the heading "Proposed savings referenced in tender
 13 submission". At 2.1 it says:
 14 "There is a potential saving of up to £376,175 that
 15 could be realised through changes to the proposed
 16 cladding. Savings can be achieved by changing the
 17 material and the method of fixing. Changing from zinc
 18 to aluminium and using a face fixing, rather than
 19 cassette, would save the most money.
 20 "All changes would have to be approved by the
 21 planners. SL [Simon Lawrence] noted that the only
 22 noticeable difference in appearance is that you would be
 23 able to see some of the fixings if the cladding is
 24 fitted using a face fix.
 25 "PB to organise an introduction between

24

1 Marc Watterson, planning consultant, and SL to discuss
 2 the potential changes."
 3 Now, I have read that in full to you.
 4 Do you recall that discussion?
 5 A. I knew about the discussion. I don't recall that word
 6 for word, but yes, I do -- I'm well aware of that, yes.
 7 Q. Yes, so you recall using face-fixing and not
 8 cassette-fixing?
 9 A. Sorry, when you say using?
 10 Q. Using.
 11 A. What, the term face-fixing?
 12 Q. No, using it as a material on the building.
 13 A. No, at this stage it was a proposal.
 14 Q. Yes.
 15 A. At the stage we're at at the moment, the client is
 16 saying that they can't achieve the budget without
 17 changing to -- or moving away from zinc, as one of the
 18 parts of the VE saving, and within that there were two
 19 options: the cassette or the face-fixed.
 20 Q. Yes.
 21 A. Sorry, what was the question?
 22 Q. You recall specifically the discussion about the choice
 23 between whether you used --
 24 A. Yes, sorry, yes.
 25 Q. -- face-fixed or you used cassette? Right. And that

25

1 was a planning question as much as a budget question?
 2 A. Yes.
 3 Q. Yes.
 4 A. Yes.
 5 Q. Now, you were tasked, it seems, with meeting
 6 Marc Watterson, who was the planning consultant at
 7 IBI Taylor Young to discuss the various options for
 8 cladding the building.
 9 Do you remember whether you did meet him?
 10 A. I don't think I've personally met him. There was
 11 a meeting with the planners which Marc may have
 12 attended, and Steve Blake attended in my absence.
 13 Q. All right.
 14 Do you know what Mr Watterson's view was on which
 15 cladding system should be used on the building?
 16 A. I would have to be reminded via email. I know there's
 17 emails relating --
 18 Q. All right.
 19 Go to {RYD00003705/4}, please. This is an email
 20 from Mr Philip Booth at Artelia to Marc Watterson, dated
 21 1 April 2014. You're not copied in on it.
 22 Claire Williams is.
 23 Philip Booth says that he has just left
 24 an introduction meeting with Rydon, the selected
 25 contractor for Grenfell. He says:

26

1 "We discussed planning permission and discharge of
 2 conditions and would like your opinion on the following:
 3 "1. Rydon are proposing a face fixed Aluminium
 4 cladding system in colours to mirror those submitted for
 5 planning. How do you advise presenting this to planners
 6 for discharge? Is a meeting required or simply supply
 7 materials proposed?"
 8 Then we can see Mr Watterson's response at page 3
 9 {RYD00003705/3} and 2 {RYD00003705/2}. If we can have
 10 pages 2 and 3 next to each other, we could see his
 11 response on 6 April. It starts at the bottom of page 2,
 12 Marc Watterson to Philip Booth, copied to
 13 Claire Williams, Peter Blythe, Bruce Sounes and you:
 14 "Philip
 15 "My responses in red below. Please give me a call on
 16 my mobile ..."
 17 Then under 1, in red, he answers the question:
 18 "As you know we have met the LPA on a number of
 19 occasions and presented a range of materials over the
 20 course of this project to date. I would recommend that
 21 a meeting with them to present early thoughts on
 22 materials, with physical samples, would be appropriate.
 23 I would suspect that they will have queries and issues
 24 and may well ask for alternatives to be explored for
 25 certain proposed materials/colours so I would also

27

1 recommend exploring options for the cladding at this
 2 stage. An initial thought - I would be concerned if
 3 'face fixed' means visible fixings."
 4 So just looking at that, is it fair to say that you
 5 at least by this point understood that there was
 6 a significant risk that face-fixed cladding would not be
 7 accepted by the planners?
 8 A. Yeah, agreed.
 9 Q. And you were the representative of Rydon who bore the
 10 most responsibility for ensuring that the cladding
 11 system was ultimately approved by the planners?
 12 A. Yes, probably, yes.
 13 Q. Yes.
 14 Let's just chase the story about discussions with
 15 planning forward a little bit. {RYD00004604}, please.
 16 These are minutes of a meeting with RBKC on 8 May 2014,
 17 and we can see who is present. You were not present at
 18 the meeting, but were copied in on these minutes for
 19 information, if you can see halfway down the first page
 20 there. We can see that Stephen Blake attended from
 21 Rydon.
 22 Do you recall the meeting taking place? Do you
 23 recall the event, even though you weren't there?
 24 A. Yes. Well, I recall it took place. I think I was on
 25 holiday at the time.

28

1 Q. We can see that Bruce Sounes was there from Studio E.
 2 Let's have a look page 1 at the bottom, at
 3 paragraph 1.2, which is the second item in the box under
 4 "Material to Façade". It says:
 5 "A flat panel ACM (Aluminium Composite Material) was
 6 proposed as the cladding material. It was confirmed
 7 that the life span for this product is similar to that
 8 of the product previously suggested."

9 Now, that's what's said. There is a story behind
 10 the scenes here, and I just want to explore that with
 11 you.

12 Can you look, please, at {RYD00004154}, first of
 13 all. This is an email dated 6 May 2014 to the planning
 14 consultant, Mr Watterson, and also to Ms Williams of the
 15 TMO, Philip Booth and Peter Blythe at Artelia, and also
 16 to Bruce Sounes and Steve Blake. You're discussing this
 17 meeting with the planners.

18 You say, under "Agenda points", as the first bullet
 19 point:

20 "Proposal of material change to the facade. From
 21 Zinc to Aluminium composite (ACM)."

22 Then you say this:

23 "Put forward our case that ACM is not an inferior
 24 product to Zinc."

25 In what respects did you think that ACM was not

29

1 inferior to zinc?

2 A. Well, the discussion was about durability and sort of
 3 longevity.

4 Q. I see. Anything else?

5 A. No, that was it.

6 Q. Why --

7 A. Zinc is seen to be a fairly luxurious material, so we
 8 could understand why the planners and why the architect
 9 in particular wished to use the -- I wouldn't say top of
 10 the range, but wished to use the luxurious material.

11 RBKC -- sorry, TMO obviously had budget constraints
 12 and needed to achieve the savings, so the intention was,
 13 we needed to make a case for everybody that ACM wasn't
 14 a cheap throwaway material in comparison to zinc. So
 15 it's relating -- in my understanding, it's relating to
 16 durability.

17 Q. Did you only focus on durability as a factor, or did you
 18 look at other things as well when assessing whether it
 19 was inferior or not inferior?

20 A. It would only be durability and aesthetics.

21 Q. Why was the comparison between zinc and aluminium
 22 composite limited to durability and aesthetics?

23 A. Because that's what the planners would have been
 24 interested in. The planners are interested in the
 25 aesthetics of a building --

30

1 Q. Yes.

2 A. -- rather than any other performance, and at that time
 3 we didn't know that there was any difference between
 4 zinc and ACM, in particular to fire performance, which
 5 is what obviously we're discussing.

6 Q. When we talk about durability, in what sense do we mean
 7 durable from a planning perspective? Do you mean
 8 visually?

9 A. Yes, visually. Yes, visually.

10 Q. I see.

11 A. As in ACM will last -- you know, ACM is not going to
 12 last two years where zinc is going to last 50 or
 13 whatever. It's trying to make a comparison to say that
 14 it's -- ACM, from a durability point of view, isn't
 15 a cheap or inferior product.

16 Q. I see.

17 So the factors governing inferiority or
 18 non-inferiority, as you said, were limited to durability
 19 and aesthetics?

20 A. Yes.

21 Q. But not fire performance?

22 A. No, that wasn't discussed at all, no.

23 Q. No.

24 When you say, "Put forward our case", did you see
 25 yourselves, or did Rydon see itself, as an advocate for

31

1 ACM against a reluctant planning body?

2 A. Yes, because we had used it successfully previously, and
 3 for the project as a whole it was in everybody's best
 4 interests at the time, with the knowledge that we had,
 5 that ACM was accepted, otherwise the TMO may not have
 6 been carrying the project forward at all.

7 Q. Right.

8 {RYD00004142}, please, is the next document I want
 9 to explore with you. This is an email from you to
 10 Steve Blake the same day, in advance of the meeting on
 11 8 May to which you were sending Steve Blake. I think
 12 the purpose of this email, and it's quite a long email,
 13 is really to brief Steve Blake, given that he was going
 14 to the meeting and you weren't.

15 A. Yes.

16 Q. Yes.

17 A. Correct.

18 Q. Let's look together at the second paragraph:

19 "The basis of the meeting is to propose the material
 20 change from 'Zinc' to 'ACM - Aluminium' cladding and the
 21 removal of the external 'window louvres' so KCTMO can
 22 achieve their maximum VE target."

23 Pausing there, VE is value engineering, I think.

24 What was the maximum VE target that you intended to
 25 communicate to Mr Blake?

32

1 A. Well, Steve was aware that the ACM face-fixed would
2 achieve the most saving.
3 Q. I see. And the change from zinc to ACM would help the
4 TMO achieve that target because it was cheaper?
5 A. Ultimately, yes, to be able to bring the project within
6 their budget, yes.
7 Q. Now, in the first and second sentences of the email you
8 say:
9 "I've get (sic) Alison to print out all the
10 attachments (above and others) relevant to the meeting
11 and put a pack together for you ready for Thursday. The
12 pack will include ... Technical info/warranties for
13 Reynobond and photos of Camden and Ferrier for reference
14 if required."
15 What technical info/warranties were you referring to
16 there?
17 A. I would assume, and I don't recall, but I would assume
18 that was probably relating to Mark Harris' email, as in
19 whatever was sent from there.
20 Q. I see. So that included the BBA certificate, did it?
21 A. I would assume so, without knowing what the attachments
22 are.
23 Q. All right.
24 What did you expect Mr Blake to do with that
25 information, if it included the BBA certificate?

33

1 A. Just to have them with him, should it need to be
2 discussed, asked for.
3 Q. I see.
4 Then you go on to say, a little bit lower down:
5 "I've been working Bruce Sounes (sic) from
6 Studio E ..."
7 This is in the third paragraph:
8 "... (our novated architect) on details, colours etc
9 for the meeting so I would expect him to lead on our
10 behalf."
11 When you say "lead on our behalf", do you mean for
12 Rydon?
13 A. Yes, and in fact probably for the TMO as well.
14 Q. I see.
15 A. You know, Bruce is obviously an architect; planners are
16 interested in aesthetics and architecture, so they talk
17 the same language.
18 Q. I see.
19 Would you expect him to lead on any issues of
20 compliance with the Building Regulations on the TMO's
21 behalf with the planners?
22 A. With the planners? I doubt that probably even come into
23 conversation with the actual planners.
24 Q. Right.
25 In the middle of the third paragraph you say:

34

1 "We've already had quite a lot of debate ..."
2 Do you see, it's halfway down that long paragraph?
3 A. Yeah.
4 Q. "We've already had quite a lot of debate about the
5 shadow gaps, fixing and fabrication details of the
6 cladding panels so he is more than aware of that there
7 are cost implications of adding in architectural details
8 that in my opinion you can't see at height."
9 It's clear from what you say in those emails that,
10 in advance of that meeting, Rydon, and in fact you
11 personally, had been substantially involved in
12 discussing the details of the ACM rainscreen which was
13 to be proposed; is that fair?
14 A. The visual details, yes.
15 Q. The visual details, all right.
16 Then you go on to say --
17 A. Sorry, which is what I'm referring to in the bottom part
18 of that bottom paragraph.
19 Q. Well, I'm going to come to that right now. If you look
20 down at the bottom part, you say:
21 "I've listed a couple of items below relating [to]
22 the changes which may be useful for the meeting:-
23 "Cladding
24 •" Reynobond ACM panels have BBA certification -
25 Class 0 and service life in excess of 30 yrs. Good

35

1 appearance should be retained for 20yrs."
2 What did you mean Mr Blake to understand by your
3 statement that the ACM panels have BBA certification
4 class 0?
5 A. Kind of exactly that, really. Like I say, our
6 understanding -- my understanding, and you'll have to
7 ask Steve, was that they needed to achieve class 0,
8 which was an understanding that we gained from our
9 previous experience.
10 Q. If the discussion with the planners was to be focused on
11 durability and aesthetics, why were you telling Mr Blake
12 that it would be useful for him to know that these
13 Reynobond panels had a BBA certification for class 0?
14 A. I think that's just me trying to be -- give as much
15 information as possible. I think there's no more --
16 well, not I think; I know there's no more to that than
17 what we've already discussed.
18 Q. Well, it rather suggests that in fact the discussions,
19 or at least your own or Rydon's own thinking about how
20 to prepare for the discussion with the planners, went
21 wider than durability and aesthetics and would include
22 fire performance.
23 A. No, I would disagree.
24 Q. So why else refer to the BBA certification for class 0?
25 A. I think I was just trying to give him the full

36

1 information that I had.
 2 Q. Right.
 3 A. Planners are not interested in the fire performance,
 4 I would suggest; I would suggest they were interested in
 5 the visual appearance in the building.
 6 Q. Indeed, which is why I asked my question: why --
 7 A. Yeah, I think I'm just trying to give him a full -- as
 8 much information as I had and give him a full rundown.
 9 Q. Right.
 10 You also say in the next bullet point:
 11 "KALC ... next door are using powder coated
 12 aluminium cladding. So not and inferior product.
 13 Precedent already set!"
 14 What fire classification did the powder coated
 15 panels on KALC have?
 16 A. I've no idea, I don't know what panels they are.
 17 Q. Did you know that in fact it was an ACM panel with
 18 a styrofoam core but with mineral wool insulation?
 19 A. Next door? No. No. You can just see that it was
 20 a powder coated --
 21 Q. Right.
 22 A. -- aluminium panel.
 23 Q. What was it about the KALC cladding that set a precedent
 24 for the Grenfell Tower cladding?
 25 A. I think generally planners -- and, again, I'm speaking

37

1 for them -- but I think generally planners will -- if
 2 the surrounding -- they'll not only look at the
 3 architecture and aesthetics of what you're proposing,
 4 they'll look at the surrounding area and the wider plan,
 5 and I think it's always useful that if you have got
 6 a brand new building next door that has very similar
 7 products, then it sets a precedent for the area.
 8 Q. So an aesthetic precedent?
 9 A. Aesthetic precedent, yes.
 10 Q. Is that what you're saying?
 11 A. Yes, yes.
 12 Q. Not a fire performance precedent?
 13 A. No, I think we've -- no.
 14 Q. Did it occur to you that the panels used on KALC were
 15 not a precedent for the ACM panels for Grenfell Tower so
 16 far as fire performance were concerned?
 17 A. No, because we weren't talking about fire performance,
 18 we were talking about aesthetics.
 19 Q. Now, we can see from your email in general that Studio E
 20 was going to be attending the meeting, and indeed did
 21 so.
 22 Can you help me: why did you think it was necessary
 23 for Steve Blake to be briefed by you on class 0 if
 24 Studio E were also going to be attending?
 25 A. I don't think it was as much thought into it as you're

38

1 suggesting. I think it's just -- it was me filling out
 2 an email before I was going on a training course or away
 3 to try and give Steve as clear, concise, as much
 4 information as possible, so he could turn up to the
 5 meeting on our behalf.
 6 Q. I follow.
 7 Staying on the topic of that meeting with the
 8 planners just for a moment, Mr Lawrence, could I ask you
 9 to go to {RYD00004221}, please. This is an email from
 10 Claire Williams of the TMO to you on the same day as the
 11 meeting, but after it, 8 May 2014:
 12 "Simon
 13 "I hope all is well ...
 14 "Steve Blake did a good job of standing in today,
 15 answered questions re the system proposed and could talk
 16 through the photos. It was a good session, but the main
 17 issue is over the face fixing of the panels - the change
 18 to aluminium was played down and did not seem to be a
 19 major issue. They asked about the cost differential in
 20 terms of the proposal and appreciate that the proposal
 21 is the more economic one, but we did not labour this at
 22 this first meeting."
 23 What did you understand that she meant by the change
 24 to aluminium being "played down and did not seem to be
 25 a major issue"?

39

1 A. As in that -- well, reading it now, I would assume that
 2 they didn't go into a great deal of detail about the
 3 comparison between zinc and aluminium.
 4 Q. Right.
 5 I know you weren't at the meeting, but what did you
 6 take away from this email about whether there had or
 7 hadn't been any discussion about fire performance?
 8 A. I wouldn't have expected there to be any discussion
 9 about fire performance.
 10 Q. Continuing with the topic of negotiation with the
 11 planners, we move forward in the story, {TMO10005924},
 12 please. I think we can take this quite quickly.
 13 At page 2 {TMO10005924/2} of this email run is
 14 an email from Sarah Scanell at the bottom, 16 May 2014,
 15 to Marc Watterson, Bruce Sounes and others. You're not
 16 copied in on that. We can see from it that
 17 RBKC Planning have said that they were unconvinced that
 18 the panels would provide the long-term quality required
 19 for such a high-profile building; do you see that?
 20 A. Yes.
 21 Q. They asked for further examples to go and look at.
 22 Now, moving further up the page, we come to another
 23 email, same day, from Amy Peck at IBI to Artelia,
 24 Bruce Sounes and Claire Williams:
 25 "Dear all

40

1 "Do you have any observations on Sarah's email?
 2 "She seems to be commenting on appearance of
 3 material and the manner of fixings - in Marc's absence,
 4 can you advise on whether the materials you have
 5 identified can be seen in a better light elsewhere? Is
 6 it more a question of how they have been fitted?
 7 "Do we have examples ..."
 8 Moving up the page further, Bruce Sounes responds to
 9 her, and this time copies in people at Studio E but also
 10 you; do you see that?
 11 A. Yes.
 12 Q. "Grenfell - Meeting attendees". So you now see the
 13 email chain, and Bruce Sounes says:
 14 "Hi Amy
 15 "I have discussed with Si m on Lawrence at Rydons
 16 and my view is the obvious next step is to go ahead with
 17 the large scale samples of the aluminium because I don't
 18 think we have exhausted our arguments for composite
 19 panels."
 20 Then a few paragraphs on down, he says that she
 21 looked at Chalcots:
 22 "... and conceded that the vast expanse of flat
 23 panel used there is unlike Grenfell."
 24 Interested in details, and then in the last
 25 paragraph, just before the picture of the spandrel, she

41

1 says:
 2 "I will be meeting Simon on site on Wednesday to
 3 discuss selection. There are options which are steps up
 4 the cost ladder which will also be discussed with the
 5 client."
 6 Do you remember, first of all, having the discussion
 7 with Mr Sounes which led to him sending this email?
 8 A. I don't specifically remember the discussions, but there
 9 are numerous at this time relating to the options for
 10 planning, so ...
 11 Q. Yes. Do you remember whether that discussion came after
 12 the 8 May meeting which you didn't attend?
 13 A. I don't recall.
 14 Q. Right.
 15 Why did you need to have arguments, as it's put
 16 here, for composite panels?
 17 A. Well, I think possibly not the greatest of terms by
 18 Bruce, but --
 19 Q. Right.
 20 A. -- we needed to put forward -- you know, the wider team
 21 needed to put forward that we were still discussing the
 22 ACM -- the visual appearance of ACM versus zinc.
 23 Q. Right.
 24 The reality is -- this is the same as your case, is
 25 it, that had to be put forward, the case for ACM as

42

1 opposed to zinc?
 2 A. Yes, yes, and I believe -- is it Sarah Scanell is one of
 3 the planners, she obviously came -- I'm not sure if she
 4 was in the original meeting or not, but she obviously
 5 came back afterwards with further comments.
 6 Q. Yes.
 7 Did you consider any of the arguments against
 8 composite panels?
 9 A. From a visual point of view -- we were just looking at
 10 the visual and we were looking at the client's budget.
 11 Q. Right.
 12 Did you take any steps to identify any disadvantages
 13 of using ACM panels?
 14 A. No, I don't believe we did.
 15 Q. No.
 16 Did the factors that you considered to be in favour
 17 of using the Reynobond ACM panels as part of your case
 18 or your argument include, in your mind, your belief that
 19 they had achieved class 0?
 20 A. At that stage, in my mind, right up until the actual
 21 disaster, I thought that they were -- we had used them
 22 previously, we had used them for the -- and I'm
 23 repeating myself here, but we'd used them for the
 24 previous five years or whatever it was or longer on
 25 previous projects with no issue and nothing being

43

1 raised. So I had no concern at that time that they
 2 weren't compliant or that there was any issues with
 3 fire.
 4 Q. Yes.
 5 What I'm really seeking to tease out from this is to
 6 what extent the arguments for composite panels included,
 7 in your own mind, the fact that you had --
 8 A. This is visual.
 9 Q. I see.
 10 A. These chain of emails is just visual and aesthetics and
 11 discussions with planners, negotiations with planners.
 12 Q. When he says he doesn't think you have exhausted the
 13 arguments for composite panels, what arguments did you
 14 think you hadn't tried yet with the planners?
 15 A. I think here he is discussing colours and the way panels
 16 are -- the way panels abut, the -- you know, the
 17 junctions, the details, et cetera. But there was a --
 18 and I don't know when it ended, but there was quite
 19 a considerable negotiation with planners and other
 20 interested parties about what the final colour was going
 21 to be.
 22 Q. Thank you.
 23 Can I now turn to a slightly different topic, which
 24 is engagement with Reynobond's competitors, and start
 25 with {SEA00011099/3}, please, which is an email from you

44

1 to Mark Harris, among others, dated 22 May 2014 now:
 2 "Hi Mark
 3 "Having spoken with Bruce and my Client this
 4 afternoon it feels that the first choice is definitely
 5 Natural Brushed Aluminium ..."
 6 Then in the second paragraph, about halfway through
 7 it, you say:
 8 "I'm sure Reynobond will happily supply the sample
 9 material when it comes to it. We haven't engaged with
 10 any of their competitors when looking at the samples so
 11 far and we don't intend to providing they give us the
 12 service. If not I'm sure Alucobond, Trespa or whoever
 13 will be more than happy to help."
 14 To what extent did Rydon ever actually investigate
 15 using products supplied by Reynobond's competitors?
 16 A. We didn't, and if we had have done, it would have been
 17 via Harleys.
 18 Q. Right.
 19 A. This email is referencing other emails where Reynobond
 20 were suggesting that we would have to pay for a sample,
 21 or Harleys would have to pay for a sample, of the -- of
 22 their material. So that's what I'm inferring at the
 23 bottom.
 24 Q. Let me just see if I understand that. Can you tell me
 25 why Rydon didn't look at any products from Reynobond's

45

1 competitors?
 2 A. I think at this stage it was -- it was known that ACM
 3 was the preferred choice, which was also noted in the --
 4 you know, as an option in the tender and the spec, and
 5 it was at that stage down to colours. And also
 6 I believe there's -- Mark Harris, they have a better
 7 working relationship with Reynobond.
 8 So as far as we'd seen previously from our
 9 experience, Alucobond particularly -- Trespa I'm not so
 10 sure because I've never used them, but Alucobond produce
 11 exactly the same as Reynobond, so ...
 12 Q. Yes, I just want to follow up on that answer.
 13 You say ACM was the preferred choice, which was
 14 noted as an option in the tender and the spec.
 15 Was the price that you had been given by Harley as
 16 the saving a price based on Reynobond?
 17 A. I think it was -- I think it was based on Reynobond, in
 18 the end, but I believe that there is a document
 19 somewhere where Alucobond is referenced, and I think the
 20 price per square metre is exactly the same.
 21 Q. Right. I see. Okay, we will come back to that if we
 22 need to.
 23 Now, when samples were ordered from Reynobond, and
 24 I think we know they were --
 25 A. Yeah.

46

1 Q. -- we know that you discussed that with Mark Harris and
 2 others at Harley. Do you remember doing that?
 3 A. I remember us doing the sample, so yes.
 4 Q. Can we go to {RYD00003965}, please. This is an email to
 5 you of 24 April 2014 from Mark Harris at the bottom of
 6 page 1 on that email string, "Morning Simon", copied to
 7 others at Harley, "RE: Planning - Rainscreen cladding
 8 samples/material". Then he says:
 9 "Morning Simon
 10 "I confirm that what you have written is correct."
 11 Then he says:
 12 "As much as I would like to try and get a bit more
 13 money for Rydon and Harley, I think we need to play this
 14 one with a straight bat, and make the offer as you have
 15 done below, as this will give us more of a chance to get
 16 it signed off quickly ..."
 17 Your reply at the top of that, which comes on the
 18 same day a little bit later in the morning:
 19 "Mark
 20 "I'm in agreement about playing it straight. If you
 21 can find out the additional cost or reduction in saving
 22 (depending how you look at it) for the other colours
 23 then at least we will be armed with facts and able to
 24 give client a choice."
 25 When you say, "I'm in agreement about playing it

47

1 straight", what did you mean?
 2 A. I think he was talking about -- I think at that stage he
 3 was talking about different -- different cost --
 4 a different scale of cost relating to different paint
 5 finishes, or different finishes.
 6 Q. What was the straight bat about that, as opposed to
 7 a non-straight bat?
 8 A. I'm just agreeing to his previous email, as in ...
 9 I don't know what he was offering at the time, so ...
 10 Q. Right. Well, he says "I think we need to play this one
 11 with a straight bat" --
 12 A. It's relating to paint finishes.
 13 Q. I know he is, but I'm just trying to understand what you
 14 understood him to mean when he says "I think we need to
 15 play this one with a straight bat". What does he mean
 16 by that?
 17 A. Unless he was inferring that there could be additional
 18 savings that Harley and/or Rydon could benefit from,
 19 and --
 20 Q. Right. What was your understanding of what he meant
 21 when you agreed with him?
 22 A. Probably that. I don't really recall the email, so ...
 23 Q. Right.
 24 Now, we have had some discussion about Chalcots and
 25 Ferrier Point --

48

1 A. Yes.
 2 Q. -- Mr Lawrence. Can we look at that a little more
 3 closely.
 4 If we go first, please, to your statement,
 5 {RYD00094220/6}, I would like to look at paragraph 29
 6 with you. You say there:
 7 "Rydon asked at least one other party than Harleys
 8 to tender for the cladding work. There was not a
 9 massive amount of cladding work out there in the
 10 refurbishment market which meant that there were not too
 11 many appropriate specialist sub-contractors that could
 12 be approached. Harleys were not the cheapest contractor
 13 at tender stage but colleagues and I had been impressed
 14 by them on other projects and liked their work. Rydon
 15 always felt it likely they would select them to carry
 16 out the cladding for those reasons."
 17 Now, you refer there to other projects. Were those
 18 other projects Chalcots Estate in Camden and
 19 Ferrier Point?
 20 A. Yes.
 21 Q. Just for dates, Chalcots was 2006 to 2009, I think; is
 22 that right?
 23 A. That sounds about correct, yeah.
 24 Q. And Ferrier Point, do you remember the dates for those?
 25 A. 2010 to --

49

1 Q. 2010 to 2011 --
 2 A. It was pretty early --
 3 Q. -- do you think --
 4 A. -- 2010, 2011, something like that.
 5 Q. Other than those two, were there any other projects
 6 involving rainscreen cladding on a high-rise residential
 7 building, other than Grenfell or prior to Grenfell?
 8 A. That Rydon had carried out or in general?
 9 Q. Well, let's start with Rydon carrying out.
 10 A. Not that I'm aware of, not with rainscreen cladding, no.
 11 Q. Right. That to your knowledge Harley had carried out?
 12 A. On their -- I would have to look at their sales
 13 literature --
 14 Q. Right.
 15 A. -- but I think they have done others, yes.
 16 Q. But those were the two projects that you're referring to
 17 when you say "other projects"?
 18 A. Yes.
 19 Q. What was your role on each of those projects, Chalcots
 20 and Ferrier Point?
 21 A. Chalcots, I was the site manager at Chalcots, looking
 22 after the external works, so that included Harleys and
 23 others. And then at Ferrier Point, I think I started as
 24 site manager and then progressed to project manager, and
 25 that involved looking at -- well, Ferrier Point was

50

1 similar to -- similar to Grenfell, we were doing more
 2 work internally as well, but externally was --
 3 Q. Yes.
 4 A. -- similar.
 5 Q. Just anticipating some questions which may come later in
 6 your evidence, Mr Lawrence, do you remember on Chalcots
 7 whether the Building Control exercise was done by the
 8 local authority or by an AI?
 9 A. It was by the local authority.
 10 Q. What about on Ferrier Point?
 11 A. It was the same. Two different authorities, but yes.
 12 Q. Yes, indeed.
 13 You say you worked as a site manager for the
 14 Chalcots Estate project. That involves an ACM
 15 rainscreen panel system.
 16 A. It did, yes.
 17 Q. In that role, were you responsible for the management of
 18 Harley's installation of the ACM rainscreen cladding?
 19 A. Yes, that was one of my roles, yes.
 20 Q. On the Ferrier Point project you say you worked
 21 initially as a site manager and then project manager.
 22 A. Yes.
 23 Q. In that role, were you also responsible for overseeing
 24 the installation by Harley of the ACM cladding?
 25 A. At Ferrier Point I was further removed, so I wasn't --

51

1 I was looking at the whole project at that point rather
 2 than just the ACM.
 3 Q. Right.
 4 How did Harley come to be involved on that project?
 5 A. Sorry, which one?
 6 Q. Ferrier Point.
 7 A. Presumably from their work from Chalcots.
 8 Q. I see.
 9 A. I wasn't involved at the very initial stages of Ferrier.
 10 I was still at Chalcots as Ferrier was design-wise and
 11 contractually-wise getting going.
 12 Q. I see.
 13 From your own knowledge -- and if you can't help us,
 14 you can't help us -- did Harley get the Ferrier Point
 15 subcontract job because of the work they had done on
 16 Chalcots?
 17 A. I imagine so, yes.
 18 Q. You imagine so, but do you know?
 19 A. I don't know for certain because I wasn't involved at
 20 the time.
 21 Q. Did CEP have any involvement in either of those
 22 projects, do you remember?
 23 A. Definitely Chalcots.
 24 Q. Yes.
 25 A. Yes, I believe they did at Ferrier as well.

52

1 Q. Right.
 2 How did they come to be involved, do you know?
 3 A. They were a fabricator of Harleys, I think windows --
 4 in fact, I'm sure windows as well as cladding.
 5 Q. When you say they were a fabricator of Harleys, what do
 6 you mean by that?
 7 A. Harleys went to them for the materials.
 8 Q. I see.
 9 A. They're a supplier, sorry.
 10 Q. Supplier?
 11 A. They're a supplier. They fabricate as well, but
 12 a supplier.
 13 Q. I'm sorry to jump around on this topic for a moment, but
 14 did you ever see any supply contract between CEP and
 15 Harley for the Grenfell Tower rainscreen?
 16 A. Not that I recall, no.
 17 Q. All right.
 18 Now, focusing on Chalcots, can I turn to the Rydon
 19 company witness statement, [RYD00094236/26], please, and
 20 I would like you to look at paragraph 46 on that page.
 21 It says:
 22 "Initially the face-fixed rainscreen cladding was an
 23 ACM cladding product called Etalbond ..."
 24 This is Chalcots, I should say.
 25 A. Correct.

53

1 Q. It starts the page before. Then it goes on in the third
 2 line:
 3 "The rainscreen cladding was replaced with Reynobond
 4 Polyethylene ('PE') ACM in 2010 - i.e. the same cladding
 5 that was used for Grenfell Tower. CEP were the supplier
 6 of the replacement product. The cavity barriers [at
 7 Chalcots] were full-width horizontal perforated metal
 8 intumescent cavity barriers rather than the open-fronted
 9 intumescent cavity barriers used at Grenfell Tower."
 10 Now, just focusing on the same cladding that's said
 11 there, according to paragraph 46 here, the original
 12 Etalbond ACM was face-fixed. Was that also
 13 a polyethylene core?
 14 A. I believe so, yes.
 15 Q. And its replacement was Reynobond PE 55, so was that
 16 exactly the same as at Grenfell Tower?
 17 A. I believe so.
 18 Q. It says that it was CEP who supplied the replacement
 19 product. To be clear, was the replacement product
 20 supplied by CEP a face-fixed panel or was it a cassette
 21 panel?
 22 A. No, it was a face-fixed.
 23 Q. At Grenfell, though, it's right, isn't it, as we know,
 24 that the ACM panels weren't face-fixed, they were
 25 cassette, weren't they?

54

1 A. Correct.
 2 Q. So they weren't the same product, were they?
 3 A. Well, they're the same material.
 4 Q. Ah, but not the same product.
 5 A. Well, I think we ... I think you could replace --
 6 I think we're possibly splitting hairs there. It's the
 7 same material. I ...
 8 Q. You say we're splitting hairs, but if the difference in
 9 fire performance between face-fixed and cassette --
 10 A. Which we weren't aware of, but yes.
 11 Q. I note your answer on that -- was as we now know it to
 12 be, that wouldn't be splitting hairs, would it?
 13 A. Not in that case, no.
 14 Q. Now, in your time on the Chalcots project, after
 15 January 2008, which is the date of the BBA certificate
 16 we saw earlier this morning --
 17 A. Right.
 18 Q. -- did you look at that certificate for Reynobond PE 55
 19 in the context of that project?
 20 A. No.
 21 Q. Now, at paragraph 51, over the page [RYD00094236/27] in
 22 the Rydon company statement, so page 27, you see at
 23 paragraph 51 it refers to a fire at Taplow House on the
 24 Chalcots Estate on 12 January 2012.
 25 Just for context, Taplow House I think is one of the

55

1 five tower blocks on the Chalcots Estate, isn't it?
 2 A. Correct, yes.
 3 Q. It says in the fourth line down:
 4 "The fire damaged panels were replaced by the same
 5 material, namely Reynobond ACM with a PE core."
 6 Do you see that? Again, the material was
 7 face-fixed, not cassette, so it would have been
 8 like-for-like, would it?
 9 A. Yes.
 10 Q. Can I ask you to look at the fire damage report from the
 11 abseil survey document for that incident. It's at
 12 [CEP000003223]. It's dated 23 January 2012. If we look
 13 at the second page [CEP000003223/2], I think we can see
 14 that. That's the date of the report. The date of the
 15 inspection, as you can see there, was Tuesday,
 16 18 January. The distribution list for this document was
 17 Steve Blake, Ray Bailey and Daniel Anketell-Jones, so it
 18 goes to Rydon as well as Harley.
 19 Are you familiar with this document?
 20 A. No, I don't think I've ever seen it.
 21 Q. Right. All right. Let's see how we go.
 22 Can I ask you to be shown page 5 [CEP000003223/5],
 23 please. We can see photographs there which show rivets.
 24 So we're clear from this that this was a face-fixed
 25 rainscreen system.

56

1 A. Correct.
 2 Q. Now, in the Rydon company statement also in
 3 paragraph 51, if we go back to that {RYD00094236/27}, it
 4 says at paragraph 51 at the end:
 5 "As far as RML [Rydon] is aware there were no
 6 concerns raised with the performance of the cladding or
 7 that the PE-grade ACM panels were unsafe or
 8 non-compliant with the Building Regulations."
 9 Was that your understanding as well?
 10 A. That was my -- yes, that was my understanding. I wasn't
 11 involved in the Taplow House post-fire works, but that
 12 was my understanding, yes.
 13 Q. If I were to ask detailed questions about that fire,
 14 given that you hadn't seen this document before, it
 15 sounds as if you're not the right person to ask.
 16 A. Probably not. I would have thought Steve is probably
 17 the person to ask. Simon O'Connor I think possibly
 18 carried out the remedial works relating to that.
 19 Q. Did you make a visit to Taplow House after the fire to
 20 inspect the damage yourself?
 21 A. No, I don't believe so.
 22 Q. So were you aware at all in the investigation into the
 23 extent of the damage or what had caused it?
 24 A. Well, only from talking to Steve, but not actually
 25 visiting, seeing and seeing reports from, no.

57

1 Q. Okay.
 2 Let me then ask you about Ferrier Point 2010 to
 3 2011. If you go back a page, please, in the Rydon
 4 company statement {RYD00094236/26}, I think we have seen
 5 this already, it says at paragraph 49 that:
 6 "As with Chalcots, ACM rainscreen cladding was used,
 7 the only difference with this being that Alucobond
 8 rather than Reynobond was used."
 9 Is that your understanding, that actually on
 10 Ferrier Point it was Alucobond not Reynobond?
 11 A. Correct, yes.
 12 Q. Right. Was the Alucobond also polyethylene core?
 13 A. I would say so, yes.
 14 Q. Do you remember whether the panels were face-fixed or
 15 cassette?
 16 A. I believe they were face-fixed.
 17 Q. Face-fixed again, right, okay.
 18 If the ACM panels used at Ferrier Point and indeed
 19 at Chalcots were face-fixed and not cassette, can you
 20 explain how you could take comfort from the past use of
 21 face-fixed at both of these projects when choosing the
 22 material for the rainscreen at Grenfell Tower?
 23 A. Because we didn't know any -- that there would be any
 24 difference between having the same material, one that's
 25 flat and one that's folded.

58

1 Q. Yes.
 2 A. So, as I've suggested a minute ago, I would understand
 3 that to be the same product, and I know we've explored
 4 that it's not, but ... because it's exactly the same
 5 material.
 6 MR MILLETT: Yes.
 7 Mr Chairman, I have about maybe ten minutes more on
 8 this topic, would it be convenient to continue?
 9 SIR MARTIN MOORE-BICK: I think that would be all right.
 10 Are you happy to keep going for another ten minutes?
 11 THE WITNESS: Yes.
 12 MR MILLETT: Can I ask you, then, to move to paragraph 103
 13 of the same document, Rydon's company statement, at
 14 page 51 {RYD00094236/51}. This is under "Summary in
 15 relation to the original design/scope of work", and at
 16 103 we can see that for both the Chalcots and the
 17 Ferrier Point projects, it is said that the ACM cladding
 18 had been installed over mineral wool insulation. Do you
 19 agree?
 20 A. Yes.
 21 Q. Did you know that fact at the time you were discussing
 22 the use of ACM at Grenfell Tower with either Mr Sounes
 23 or the planners or Harley?
 24 A. That we had used mineral wool previously?
 25 Q. Yes.

59

1 A. Yes.
 2 Q. You knew that fact?
 3 A. Yes.
 4 Q. You were aware of that, were you?
 5 A. I knew that we had used mineral wool previously, yes.
 6 Q. Can I ask you to look at {RYD00009105}. This is
 7 an email from you to Tom Elliott of Rockwool on
 8 18 June 2014.
 9 We can see lower down the string -- taking this
 10 quickly -- you had been introduced to him by
 11 Claire Williams. We can see that if you want to. If
 12 you want to turn the page just to see how this came
 13 about {RYD00009105/2}.
 14 A. Yeah.
 15 Q. The introduction came from Claire Williams, and then you
 16 communicate with him on 18 June in the email at the top
 17 of the page. We can see that you told him that Rockwool
 18 had been used on all previous tower block refurbishments
 19 with Harley; do you see that?
 20 A. Yes.
 21 Q. So can we take it that, in mid-2014, you were aware that
 22 Chalcots and Ferrier Point were cladding systems using
 23 PE core rainscreen over mineral wool as the insulation
 24 material?
 25 A. Yes.

60

1 Q. And therefore not over PIR or phenolic insulation
 2 material?
 3 A. Correct.
 4 Q. Was that distinction one which had occurred to you at
 5 the time?
 6 A. Not specifically. Not when I ... we might be going
 7 slightly off-topic or coming on to something else, but
 8 not when I knew that there was -- Celotex was proposed,
 9 I just saw that Rockwool and Celotex were both major
 10 national, if not international players in the insulation
 11 market and I just assumed that they were like-for-like
 12 products, even if they're not the same material.
 13 Q. Right.
 14 A. Performance-wise, that is.
 15 Q. Do we take it from that answer that at this point,
 16 June 2014, you knew or you were conscious that the
 17 insulation proposed for Grenfell Tower was
 18 Celotex FR5000?
 19 A. Yes.
 20 Q. Which became RS5000.
 21 A. Yes.
 22 Q. Okay.
 23 Was the purpose of this email, then, to explore
 24 whether Rockwool should be used in place of the
 25 specified FR5000?

61

1 A. This email trail all came about from Rockwool making
 2 a -- sort of an unsolicited sales pitch, and I think it
 3 further followed because they were offering some
 4 ECO funding or the ability to use Rockwool, and
 5 therefore attract some ECO funding.
 6 Q. Right. I see. So do we take it from that answer that
 7 it hadn't come about because of your concern about
 8 whether PIR was suitable?
 9 A. Correct.
 10 Q. Now, did you give any consideration to the fact that
 11 your previous use of polyethylene cored ACM panels as
 12 a rainscreen had been over a different insulation
 13 product, namely Rockwool at Ferrier Point and Chalcots,
 14 when you were considering its suitability for the
 15 Grenfell Tower project?
 16 A. Not -- no, not overly. I've -- again to -- apologies,
 17 to repeat myself, we've received a tender with the
 18 specification in it, with our specialist subcontractor
 19 that's seen that specification, priced against that
 20 specification, and has not raised any concerns, and
 21 I don't believe any other tenderer has raised any
 22 concerns at the time either regarding the specification.
 23 So this email is purely relating to Rockwool making a --
 24 you know, a sales pitch to use their product over their
 25 competitors, Celotex, or any other competitor.

62

1 Q. Did it occur to you -- I have already touched on this
 2 a moment ago -- at the time that when you were looking
 3 at the rainscreen system as a system, it was different
 4 from Chalcots and Ferrier Point because it was ACM over
 5 PIR as opposed to ACM over mineral wool?
 6 A. Only the fact it was ACM over a Celotex product as
 7 opposed to a Rockwool product.
 8 Q. Did you take any --
 9 A. The actual content of the product, no, I didn't know
 10 the -- I didn't --
 11 Q. Right. Would it follow, therefore, that you didn't take
 12 any steps to verify that the cladding system as
 13 a system -- PE ACM panels and PIR insulation -- was
 14 equally suitable and safe?
 15 A. I relied on my specialist subcontractor --
 16 Q. Right.
 17 A. -- who had the technical knowledge to be able to tell me
 18 that.
 19 MR MILLETT: Mr Chairman, there is a mini topic to come, but
 20 I think --
 21 SIR MARTIN MOORE-BICK: Would that be a better point?
 22 MR MILLETT: It probably would be now.
 23 SIR MARTIN MOORE-BICK: All right, good.
 24 Mr Lawrence, we will have a break now, please.
 25 Usual injunction: don't talk to anyone about your

63

1 evidence while you're out of the room. We will come
 2 back at 11.35, please.
 3 THE WITNESS: Thank you.
 4 (Pause)
 5 SIR MARTIN MOORE-BICK: Good, 11.35, please.
 6 (11.20 am)
 7 (A short break)
 8 (11.35 am)
 9 SIR MARTIN MOORE-BICK: Ready to continue, Mr Lawrence?
 10 THE WITNESS: Yes.
 11 SIR MARTIN MOORE-BICK: Good.
 12 Mr Millett.
 13 MR MILLETT: Mr Chairman, Mr Lawrence, I just want to
 14 investigate with you a little bit the discussion about
 15 ACM at Chalcots.
 16 Do you recall that in the first part of 2017 there
 17 was an issue at Chalcots Estate, in that the ACM product
 18 which had been used on the rainscreen there was
 19 delaminating?
 20 A. I only know from the evidence that I've seen, but no,
 21 I didn't know at the time.
 22 Q. I see. Were you involved in that issue at all?
 23 A. No, I was --
 24 Q. You weren't?
 25 A. -- long gone from Rydon then.

64

1 Q. Let me see how far we can get with that. You had gone,
2 so you don't have any recollection of Mr Wehrle of
3 Alcoa?
4 A. No.
5 Q. Perhaps we should ask others about that.
6 Now, turning to the difference we were talking about
7 before the break between face-fixed and cassette --
8 that's the topic -- can I start by asking you to look at
9 {SEA00011033}. This is an email of yours of 23 May 2014
10 to Bruce Sounes and Claire Williams, copied to
11 Marc Watterson of IBI, about the cladding. It responds
12 to Mr Sounes' email to you of earlier that day, that we
13 can see at the bottom of page 1.
14 He says to you in that email and to Claire Williams:
15 "If we send the Planners to see the example they
16 will jump on the fact it is clean of all face fixings,
17 with rivets mostly concealed in return faces to the
18 joints. I know you have prepared cost options to do
19 this but I've prepared a sketch, attached showing how
20 the ACM could be assembled as cassettes or perhaps as a
21 hybrid which I'm less convinced by."
22 I don't think you need the rest of that. Then you
23 respond to him not long later the same afternoon, and
24 you say:
25 "Thanks for taking a look at this earlier today.

65

1 I'm glad it was as good in the flesh as the pictures.
2 Obviously the cassette vs face fixed is a discussion
3 which will need to be made initially by KCTMO before it
4 is presented to planners because as we spoke about on
5 Wednesday there is a substantial amount of cost
6 difference between the two options. I believe this
7 could have great bearing on the affordability of the
8 scheme and justification of the spend to their
9 residents."
10 Is it fair to say that you are at this stage trying
11 to set out the case for face-fixed or riveted cladding?
12 A. The whole team was, because --
13 Q. Yes.
14 A. -- it provided the most budget saving.
15 Q. That's because it was the preferred option because it
16 was cheaper?
17 A. Based on cost, yes.
18 Q. It looks as if Mr Sounes thought that cassette was more
19 likely to appeal to the planners because of the
20 appearance. Was that the debate?
21 A. Yes, it did appear to be, yes.
22 Q. Yes, and you go on in the second paragraph, as we see,
23 to ask Claire Williams to say whether she thinks that
24 showing the planners cassettes is a risk. Do you see
25 that?

66

1 A. Yes.
2 Q. What was the risk?
3 A. That if she showed them cassettes -- I think here we
4 were talking -- yeah, so we're talking about them going
5 and seeing another Reynobond building as installed, and
6 if showing them cassettes, would they prefer that over
7 face-fixed, so did she just want to show them face-fixed
8 options first.
9 Q. Was the risk that you're talking about here the risk
10 that seeing cassettes might persuade the planners that
11 they were preferable to face-fixed?
12 A. Yes.
13 Q. They looked nicer?
14 A. Yes.
15 Q. And therefore there is a risk that the more expensive
16 option might be picked?
17 A. Correct.
18 Q. I follow.
19 Again, can we assume from your answers earlier today
20 that no consideration was given to the fire safety of
21 these two options compared with each other?
22 A. Correct.
23 Q. Next document, {RYD00005064}, please. This is an email
24 from you to Steve Blake, the same afternoon, a little
25 bit later on that day, and also to Zak Maynard, in which

67

1 you express your concern that the client may choose
2 cassette-fixed cladding over face-fixed because of the
3 planning risk.
4 A. Correct.
5 Q. And the figures you go on to talk about in the second
6 line are as follows. You say:
7 "This gives us a benefit of £126,259 rather than the
8 preferred face-fix option which will generate £200,798
9 benefit. I'm giving it my hardest sales pitch as we
10 speak. Come on the Essex boy patter!"
11 The benefits are the benefits of the savings to
12 Rydon that you were not planning to pass on to the TMO,
13 weren't they?
14 A. I believe so, yes.
15 Q. Now, can we look, please, at the same time -- if we can
16 put next to that {RYD00004204}, and this is
17 Zak Maynard's email to Steve Blake on 8 May 2014, so
18 a little bit earlier in the month that year, where you
19 can compare the figures. You can see that the
20 differences between the Harley savings and the Rydon
21 savings as between face-fixed and cassette versions are
22 almost identical to the figures in this 23 May email
23 that you send to Mr Blake. Yes?
24 A. Yes.
25 Q. Then going back to the left-hand side where you say:

68

1 "I'm giving it my hardest sales pitch as we speak.
 2 Come on the Essex boy patter!"
 3 Can we take it from that that you were trying to
 4 drive down the cost for value engineering purposes by
 5 pushing face-fixed, but the planners were likely to go
 6 for cassette because of the look of the thing?
 7 A. Correct.
 8 Q. Yes, I see. And you were doing that in order to
 9 maximise Rydon's own financial position?
 10 A. That was part of it and part of it was for the client,
 11 but yes.
 12 Q. Can I turn away from those two documents to
 13 {SEA00011069}, moving forward in the story, 2 June 2014.
 14 This is an email from you to Peter Blythe of Artelia,
 15 and also to Bruce Sounes, copied to Claire Williams and
 16 Philip Booth -- he is Artelia -- "Re: Grenfell cladding
 17 proposals", and there is a long second paragraph, and
 18 I'll just read a part of it to you:
 19 "The summary to date is that following the Planners
 20 meeting and their visit to Chalcots both Bruce and
 21 myself have been working on selecting the type of
 22 cladding (i.e. colour and texture) which we feel will be
 23 in line with what the Planners are after. We've also
 24 been carrying out design work on the mock sample that we
 25 will fix to the building and present to the Planners.

69

1 The first choice of cladding is a Reynobond Natural
 2 Brushed Aluminium."
 3 So that confirms at this point that the biggest
 4 savings were to be made by using face-fixed ACM from
 5 Reynobond and not cassette; yes?
 6 A. Correct.
 7 Q. Again, at this point nobody had alerted you to the
 8 potential differences in terms of fire safety?
 9 A. Wasn't aware of them.
 10 Q. Had Harley had any input into this debate about
 11 face-fixed as against cassette at this point?
 12 A. Well, they were involved in all the -- providing and
 13 Reynobond were providing information as to where their
 14 products had been used elsewhere that the planners could
 15 see. They were involved in the details -- this is
 16 Harley were involved in the details -- of how the
 17 mock-up was to be put together. So, yeah, everybody
 18 was --
 19 Q. Right.
 20 A. -- involved.
 21 Q. Okay.
 22 Can I then turn to a slightly different subject,
 23 which is Carl Stokes and his fire risk assessment.
 24 Do you recall that Carl Stokes had carried out
 25 a fire risk assessment in the October of 2014, so

70

1 a little bit later than this debate about cassettes and
 2 face fix?
 3 A. I recall him being around, I don't -- yeah, I don't
 4 recall the document, if we've ever seen one, so --
 5 Q. All right.
 6 Can I ask you then to go to his report of that year.
 7 It's {TMO10012526}. I would ask you, please, to look at
 8 this first of all, which is his record of significant
 9 findings and action plan.
 10 Just in general terms, were you familiar with the
 11 fire risk assessments which had been historically
 12 produced by Carl Stokes for this building?
 13 A. No, I don't think we were, no.
 14 Q. All right.
 15 So this forms part of a report for October 2014
 16 which he had given to the TMO. Can I ask you to put
 17 pages 10 {TMO10012526/10} and 11 {TMO10012526/11} next
 18 to each other. This is part of his record of
 19 significant findings which we have seen on page 1.
 20 If you look at the bottom of page 10, and this is
 21 17 October 2014, you can see that he has identified at
 22 the bottom of page 10, item number -- "Priority: High"
 23 in red. Do you see that?
 24 A. Yes.
 25 Q. The identified risk here is external walls. It starts

71

1 at the bottom of page 10 and goes over to page 11. Do
 2 you see it says, and it's red:
 3 "High. The external face of this building is to be
 4 over clad. The piece of cladding fixed to the external
 5 wall at the moment is on timber battens."
 6 Then the recommendation under "Actions to be taken",
 7 he says:
 8 "I would recommend that the contractor provides:
 9 "1. The scope of works covering how this cladding
 10 (sic)? How will the cladding be fixed to the building?
 11 "2. What fixings will be used?
 12 "3. The fire rating of the cladding and the
 13 fixings?
 14 "4. The Building Control Officers' acceptance of
 15 this fixing system and the cladding used?"
 16 It's to be completed by Claire Williams, query.
 17 Were you, to your knowledge, personally ever asked
 18 to provide the information that is sought there?
 19 A. By Carl Stokes or by --
 20 Q. By anybody. By Claire Williams or Carl Stokes or
 21 anybody.
 22 A. I don't recall ... I don't recall being specifically
 23 asked, no.
 24 Q. Right.
 25 Are you able to help with what Mr Stokes might have

72

1 meant by the fire rating of the cladding and fixings?
 2 A. I'm not sure I could add to what he has already written,
 3 really.
 4 Q. Let me try it this way: is the expression "fire rating"
 5 one which you were familiar with when used in the
 6 context of an external wall construction?
 7 A. I think "fire rating" is a general term within overall
 8 building, so ... yeah, it's a term.
 9 Q. Right.
 10 A. I don't really understand what you mean.
 11 Q. Specifically, do you remember Claire Williams ever
 12 turning to you at this time and saying, "What is the
 13 fire rating of the cladding and the fixings"?
 14 A. Relating to the ACM, no, I don't remember that at all.
 15 Q. Do you know whether anyone else in Rydon was asked that
 16 question by Claire Williams?
 17 A. I don't -- I don't recall, they may have been, I don't
 18 know.
 19 Q. Or anybody else at the TMO?
 20 A. I don't -- I don't recall that.
 21 Q. Do you remember whether Rydon or you specifically ever
 22 asked Building Control whether the cladding system was
 23 acceptable as per paragraph 4 in his "Action to be
 24 taken"?
 25 A. Well, we did by the Building Regulations and

73

1 Building Control application via our supply chain and
 2 designers.
 3 Q. Very well. We will come back to that topic later.
 4 Can I then turn to a completely different topic,
 5 which is Celotex RS5000, which we touched on just before
 6 the break this morning.
 7 Can I take you first, please, to the NBS
 8 specification, which is {SEA00000169/73}. I would like
 9 you to look with me, please, at H92, 776, at the very
 10 top of the page, "Thermal insulation". You can see
 11 there that the Celotex FR5000 was what was specified for
 12 use on Grenfell Tower. Yes?
 13 A. Yes.
 14 Q. It does say that, and that then formed part of the
 15 employer's requirements, as I think you confirmed --
 16 A. Yes.
 17 Q. -- before.
 18 Looking at the detail, you can see what is
 19 specified:
 20 "Material: Zero ODP rigid polyisocyanurate
 21 insulation board. BRE Green Guide rating A+.
 22 •" Manufacturer: Celotex ..."
 23 Then there are some dimensions, but the first bullet
 24 point before that:
 25 "Product reference: FR5000 aluminium foil faced both

74

1 sides."
 2 Then thickness and required performance. I'm not
 3 going to read it all out to you.
 4 My question is: had you read the specification on
 5 this topic at any particular point during your role at
 6 Grenfell Tower on that project?
 7 A. I had been through the specification, yes, but --
 8 Q. Did you focus on this part of it particularly?
 9 A. I don't think particularly any more than any other, no.
 10 Q. What knowledge of FR5000 as a product did you have
 11 before starting your time on the Grenfell Tower project?
 12 A. None, as far as I'm aware.
 13 Q. You had no knowledge of it?
 14 A. FR5000 doesn't ring any bells of --
 15 Q. Right. It's not a product you have used before, is it?
 16 A. Celotex and/or rigid insulation boards, yes, we've used
 17 before, and yes, I've seen. But FR5000 is -- didn't
 18 mean anything to me.
 19 Q. Right.
 20 Can I ask you to look at {SEA00002275}, please.
 21 This is a budget, and it was created by Harley on
 22 18 October 2013 for the Grenfell Tower project. Now,
 23 obviously at this time, this is even before the tender
 24 process had started, so you would not have been involved
 25 at all at this point.

75

1 Did you ever see this document when you did come
 2 into the project?
 3 A. No.
 4 Q. Have you ever seen it before?
 5 A. No.
 6 Q. Right. Let's see how we go with it, then.
 7 Page 1, "Reynobond zinc rainscreen spandrel
 8 cladding"; do you see that --
 9 A. Yes.
 10 Q. -- two items down --
 11 A. Yes.
 12 Q. -- in the list? Then seventh line down:
 13 "Reynobond zinc rainscreen column casings and
 14 insulation."
 15 Then:
 16 "Composite pre-cast concrete column cladding and
 17 insulation."
 18 You see that there?
 19 A. Yeah.
 20 Q. At any stage after you became involved in the project,
 21 did you ever discuss with Harley the choice of FR5000 as
 22 a product?
 23 A. It was only -- the only conversations that were had and
 24 documented were relating to the sales email from
 25 Rockwool and passing that backwards and forwards

76

1 relating to ECO funding.
 2 Q. Right, I see, okay.
 3 A. Apart from that, no.
 4 Q. Can I ask you about U-values for a moment. Can you
 5 please be shown {SEA00011581}. This is a set of minutes
 6 from design team meeting number 2 at which we can see
 7 you were present, among other people; Simon O'Connor,
 8 Neil Crawford and others from Harley as well, and
 9 Mr Sounes is not there.
 10 If you turn, please, to page 4 {SEA00011581/4} and
 11 go to item 3.62, we can see that there was a discussion
 12 about U-values. It says:
 13 "U-values were discussed with SL [Simon Lawrence]
 14 asking how the figures in the spec, were arrived at and
 15 whether they need to be rechecked from an M&E and
 16 insulation point of view."
 17 Note insulation there.
 18 "Is the insulation thickness show on Architect
 19 drawings, correct. DAJ [that's Daniel Anketell-Jones
 20 from Harley] confirmed that he had checked them but with
 21 the assumption that RML [Rydon] were fitting further
 22 insulation internally. SL didn't believe this was part
 23 of the spec. All parties agreed to check their
 24 documents."
 25 Then there's a post-meeting note which says:

77

1 "Max Fordham tender U-Value document was shared to
 2 team via email. External wall construction was checked
 3 against all tender information and all information
 4 shared."
 5 Why was it that you wanted to check the U-values at
 6 that moment, at that time? This is September 2014.
 7 A. I would suggest by that that Harleys are wanting to know
 8 the U-values that need to be achieved, so they can check
 9 the thickness of the insulation that needs to go
 10 externally.
 11 Q. When it says in the post-meeting note, "External wall
 12 construction was checked against all tender information
 13 and all information shared", did that include -- well,
 14 let me ask: did you check the external wall construction
 15 designs against the tender information?
 16 A. I don't know what was involved in that.
 17 Q. When it says --
 18 A. What precise documents, I haven't got any record of what
 19 precise documents were checked. But I wouldn't
 20 necessarily have picked -- we wouldn't -- well, I would
 21 assume wouldn't necessarily pick up drawings to see what
 22 was on the -- well, we may have done, may have picked up
 23 the drawings and looked at the drawings to see what was
 24 being shown on that against the NBS spec, against
 25 Max Fordham's spec. But we're looking at a thickness

78

1 there.
 2 Q. Yes, I see that.
 3 When it says, "External wall construction was
 4 checked against all tender information and all
 5 information shared", who was doing the checking and who
 6 was doing the sharing?
 7 A. Well, I don't recall. I would guess that's the royal --
 8 that would be Studio E, Harleys, and possibly ourselves.
 9 Q. Okay.
 10 Now, I just want to ask you one or two questions
 11 about Rockwool while we're on the subject.
 12 A. Yeah.
 13 Q. Can I ask you to go, please, to {RYD00006697}. This is
 14 in the context of your evidence earlier -- yesterday,
 15 I think -- when you mentioned ECO funding.
 16 Just before we look at the detail of this, we're in
 17 June 2014. At that point, Mr Lawrence, did you still
 18 think that a grant for ECO funding was an important
 19 aspect of the way in which cost savings could be
 20 achieved for the project?
 21 A. Yes, I believe we were still investigating then what
 22 options there were.
 23 Q. Here is an email chain between Zak Maynard of Rydon and
 24 Tom Elliott of Rockwool. It starts a little earlier
 25 down the chain, and the date range for this is

79

1 4 to 10 June 2014, and there is a discussion about
 2 ECO funding in it, in the context of the possible use of
 3 mineral wool.
 4 At the top of the chain we can see that Zak Maynard
 5 sends this whole chain to you on 10 June 2014 with
 6 "FYI".
 7 Do you recall receiving this email chain and seeing
 8 the discussions that had eventuated between Mr Elliott
 9 and Mr Maynard?
 10 A. I remember there being discussions about the ECO
 11 funding; I don't remember this specific email any more
 12 than the others.
 13 Q. Okay. Let's see how far we get with your recollection
 14 of it.
 15 If we look at the next page down, page 2
 16 {RYD00006697/2}, we look at his email of 4 June 2014,
 17 this is Tom Elliott to Zak Maynard. If we look at the
 18 third paragraph there, it says:
 19 "All stone wool insulation comes with a euro class
 20 fire rating of A1, and therefore our systems are
 21 particularly suited to high-rise and school
 22 refurbishment in accordance with BR 135 and BB100.
 23 These systems also include the unique 4 in 1 benefits of
 24 Rockwool products: fire protection, acoustic
 25 performance, highly durability and fully recyclable."

80

1 So that's down the email chain.
 2 Did you notice that or pick that information up when
 3 you read this email chain that Zak Maynard sent you?
 4 A. No, not particularly, no.
 5 Q. Did you have any discussion with Zak Maynard about what
 6 Euro classifier rating was applied to stone wool?
 7 A. No, because I don't think I would have understood that.
 8 Q. Right.
 9 A. And I wouldn't expect Zak to either, particularly.
 10 Q. I see. So you had no understanding of what Euro
 11 class A1 meant?
 12 A. No.
 13 Q. Right.
 14 A. I see that purely as a sales email.
 15 Q. Did you not pick up the fact that clearly, even as
 16 a sales email, Mr Elliott recorded it as important for
 17 you to know that the insulation, being stone wool, had
 18 an A1 fire rating and therefore was particularly suited
 19 to high-rise?
 20 A. No, I just read that as it is. I don't read too much
 21 into that, I read that as a sales email. And I believe
 22 that got passed on to Harleys eventually anyway.
 23 Q. It may be a sales email, Mr Lawrence, but was it not
 24 important to notice at the time, or did you notice at
 25 the time --

81

1 A. I don't --
 2 Q. -- that this was a --
 3 A. -- no.
 4 Q. Right.
 5 So do I take it from this exchange that you really
 6 just dismissed it as a sales email rather than paying
 7 close attention to what was in it?
 8 A. I think we passed it on to Harleys, but there are a lot
 9 of -- you get a lot of approaches from manufacturers
 10 wishing to use their products, obviously --
 11 Q. Right.
 12 A. -- on construction projects. So Rockwool were somebody
 13 that we knew because we had used them previously, but we
 14 didn't know that there was any -- or was aware of any
 15 difference between one or the other as far as any fire
 16 performance, safety or anything else.
 17 Q. Can I ask you to look at page 1 {RYD00006697/1}, then,
 18 in this email chain, which is Mr Elliott's email of
 19 10 June 2014 to Zak Maynard, immediately under what
 20 Zak Maynard copies to you two minutes after he receives
 21 it. He gets it at 12.04, he pings it on to you at
 22 12.06, and he says, "Hi Zac". Second paragraph:
 23 "Thanks again for the information. I noticed on
 24 your website that you are planning on attracting ECO
 25 funding to the project, and thought it important to make

82

1 you aware that the only insulated rainscreen cladding
 2 system available at the moment which attracts ECO
 3 funding is our Rockwool duo-slab. The reason for this
 4 is that in order to attract ECO funding the systems
 5 being used must have Ofgem appropriate guarantees
 6 against them, and we have worked with a specific
 7 guarantee provider to arrange our guarantee. The system
 8 is a combination of Rockwool dual density insulation and
 9 Rockpanel lightweight cladding, both of which have
 10 superior fire ratings of Euro class A1."
 11 Do you remember reading at least that part of the
 12 email chain?
 13 A. I remember these -- I remember the email chain and
 14 I remember it being a sales pitch from another
 15 manufacturer offering to assist with ECO funding, and
 16 I remember we took the email and we passed it on to
 17 Harleys and they investigated that.
 18 Q. You did indeed, and I'm going to show you that now:
 19 {RYD00007567}, because we can see your reaction here.
 20 Simon Lawrence to Zak Maynard, the following day, early
 21 in the morning, 11 June:
 22 "Something for the Harley inclusions! Make sure
 23 they use appropriate insulation to achieve grant
 24 funding. They normally use Duo Slab anyway so shouldn't
 25 be an issue."

83

1 What did you mean by "Harley inclusions" there?
 2 A. To -- as part of the Harley order.
 3 Q. As part of the Harley order?
 4 A. I think we were looking -- I think we were looking to go
 5 back-to-back or to reference the ECO funding exploration
 6 in our contract with Harleys.
 7 Q. Right.
 8 A. So an inclusion in their contract, is what I'm getting
 9 to.
 10 Q. I see. Does that mean that you wanted Harley to select
 11 and use appropriate insulation to achieve grant funding?
 12 A. If grant funding was available, and we were able to use
 13 it, and at that time I'm thinking it's just
 14 a like-for-like swap from Celotex, so from one
 15 manufacturer to another --
 16 Q. Right.
 17 A. -- then we would ask Harleys to -- you know, if it was
 18 a like-for-like swap and it was as simple as that, then
 19 we would want Harleys to use the one that would attract
 20 or grant funding for the client.
 21 Q. That would mean switching away from RS5000 to Rockwool
 22 or some other mineral wool, would it?
 23 A. Whoever or whatever product that had -- that attracted
 24 that ECO funding.
 25 Q. You say, "I'm thinking it's just a like-for-like swap

84

1 from Celotex". Did you think that Celotex -- well, let
 2 me try it this way: in what respect did you think that
 3 Celotex and Rockwool were like-for-like?
 4 A. The fact they're insulation materials, that's kind of as
 5 the extent of my thought process about the insulation.
 6 Q. Given that the email chain we saw earlier said -- and
 7 it's here indeed in this one as well -- that Rockwool
 8 has a fire rating of Euro class A1, did you address your
 9 mind to the question of whether Celotex FR5000 also had
 10 a fire rating of Euro class A1?
 11 A. No.
 12 Q. So your like-for-like comparison did not extend to one
 13 of the features which Tom Elliott was drawing to
 14 Mr Maynard's attention, namely its superior fire rating?
 15 A. I think, as I've just answered, we wouldn't have
 16 understood or known the classifications and quite what
 17 they meant anyway. We saw that -- I see that as a sales
 18 email, with one large manufacturer trying to get their
 19 products used on a building, from a sales point of view.
 20 Did we read, digest, research every part of that sales
 21 email at that time? No, we didn't.
 22 In hindsight, knowing what we know now, then that
 23 might be a different matter. But at that time, no.
 24 It's a sales email. It's one of 80, 100 emails that
 25 comes in a day that you're trying to deal with, and

85

1 you're trying to deal with it on the basis that you may
 2 be able to get some ECO funding -- secure some
 3 ECO funding for the client.
 4 Q. It was clear, wasn't it, from that specification that
 5 Rockwool wasn't going to be used?
 6 A. Sorry, from which specification?
 7 Q. Did you think that the specification for insulation
 8 could be changed from RS or FR5000 to Rockwool if you
 9 got an ECO funding grant?
 10 A. Yes.
 11 Q. Did you give Mr Maynard the instruction that you give
 12 him, namely "Something for the Harley inclusions",
 13 because you thought that Rockwool would attract the
 14 funding that you thought was essential?
 15 A. Yes.
 16 Q. Does it follow that you hadn't taken any steps yourself
 17 to understand the fire performance of the Rockwool
 18 system before you asked that the Rockwool system formed
 19 part of the Harley inclusions?
 20 A. I don't know the timing of the emails compared to what
 21 we sent to Harley and asked them to investigate it. It
 22 was -- on that I'm raising a point that if that does
 23 provide funding, and, you know, if it's suitable -- I'm
 24 not making assumption -- I'm not saying it's suitable,
 25 I'm -- then we would ask Harleys to -- it to be included

86

1 in their contract, so they did use Rockwool.
 2 Q. Is there any sense in which we should read your email to
 3 Zak Maynard as saying that, in order to achieve grant
 4 funding, it was important to ensure that you used fire
 5 safe insulation, or was that not part of your thinking?
 6 A. No, that's not part of the thinking.
 7 Q. I see.
 8 When you say here in the email, "They normally use
 9 Duo Slab anyway so shouldn't be an issue" -- you see you
 10 say that?
 11 A. Yes.
 12 Q. Were you referring to your previous experiences with
 13 Harley?
 14 A. Yes.
 15 Q. And specifically in relation to the cladding system at
 16 Chalcots and Ferrier Point?
 17 A. Yes.
 18 Q. So Duoslab was a mineral wool used on those projects?
 19 I think you confirmed that earlier.
 20 A. Yes.
 21 Q. Yes.
 22 So is it fair to say that, at this time, you didn't
 23 think it would be a problem for Harley to follow the
 24 requirements for ECO funding which have been described
 25 in the emails we've just been looking at here?

87

1 A. No, I didn't know if -- I didn't know if it would be
 2 a problem, we needed them to investigate that, but --
 3 Q. Right.
 4 A. What I didn't want is we didn't want -- if there was
 5 an option on the table to use one manufacturer that gave
 6 the client some funding, we wanted that, providing it
 7 was appropriate, put in the contract with Harleys, so it
 8 didn't have a better buy scenario and then go somewhere
 9 different.
 10 Q. Right.
 11 The email suggests changing or possibly changing the
 12 insulation, but doesn't suggest changing the rainscreen.
 13 A. Correct.
 14 Q. Given that the email from Tom Elliott to Zak Maynard
 15 said in the first main paragraph that I've read out
 16 aloud to you that the only guarantee would come if you
 17 used Rockpanel lightweight cladding as the rainscreen,
 18 what thought did you give to changing the whole thing to
 19 use Rockwool and Rockpanel?
 20 A. On that email trail, none, which I think probably goes
 21 to indicate that we didn't study that email from
 22 Rockwool in depth.
 23 Q. Right.
 24 What gave you to think that by using Rockwool for
 25 the insulation but sticking with Reynobond PE 55 ACM for

88

1 the rainscreen panel you would get ECO funding?
 2 A. Because I've obviously not fully studied and digested
 3 Rockwool's email.
 4 Q. Okay.
 5 Can we look at {RYD00008863}, please, and put up
 6 pages 1 and 2 {RYD00008863/2} next to each other. This
 7 is an email run on 16 June 2014 where we can see, on the
 8 base of page 1 and over to page 2, Tom Elliott on
 9 16 June 2014 going to Claire Williams, not copied to
 10 anybody, "Good morning Claire, hope you are well". Then
 11 he says:
 12 "I work within Rockwool's Refurbishment &
 13 Regeneration team ..."
 14 At the top of the next page he explains various
 15 things about the product, same sort of things that we
 16 have seen earlier:
 17 "All stone wool insulation comes with a euro class
 18 fire rating of A1, and therefore our systems are
 19 particularly suited to high-rise refurbishment in
 20 accordance with BR 135."
 21 So this is that. Then she pings that on to you on
 22 16 June:
 23 "Simon
 24 "Just had contact from the below. FYI."
 25 Did it surprise you that Rockwool had contacted

89

1 Claire Williams directly?
 2 A. Surprised, no. I think it's a typical sales approach
 3 from a major manufacturer.
 4 Q. Yes, and this postdated the discussions that Zak Maynard
 5 and Tom Elliott had been having a few days before,
 6 didn't it?
 7 A. Yes.
 8 Q. So they had tried you out and gone now directly to the
 9 TMO.
 10 A. Yes.
 11 Q. Were you surprised that they had done that?
 12 A. No.
 13 Q. No.
 14 Do you know how that came about? How did
 15 Tom Elliott get Claire Williams' details, do you know?
 16 A. No, I don't -- I don't know. I would imagine it's not
 17 very hard to find.
 18 Q. Okay.
 19 Now, you see this because she pings it on to you the
 20 same morning of 16 June. You could see from that, could
 21 you, that she could see from Mr Elliott's email that
 22 Rockwool insulation had an A1 fire rating?
 23 A. I can see that now, but I ... I would imagine, and then
 24 you will have to ask Claire herself, I would imagine
 25 that Claire has done the same thing as the rest of us:

90

1 has seen a sales email come in and has not picked it
 2 apart word for word and understood exactly everything
 3 that's said.
 4 Q. We had already seen that Mr Elliott had made it clear in
 5 his previous emails that it was the entire system,
 6 including the rainscreen material, which was relevant to
 7 obtaining grant funding, didn't we? We needed Rockwool
 8 and Rockpanel.
 9 A. Yes.
 10 Q. So when you told Claire Williams that the query was
 11 relevant to the insulation for grant funding, as we see
 12 in the top email there, that was only half right, wasn't
 13 it, because you had been told in Mr Elliott's email of
 14 10 June that the only insulated rainscreen cladding
 15 system itself which could attract ECO funding was
 16 Rockpanel?
 17 A. Yes, which I think goes to show that we didn't fully
 18 digest the emails.
 19 Q. Do you agree that you should have made it clear to the
 20 TMO that, in order to get grant funding at all, you
 21 needed to use mineral wool and Rockpanel together as
 22 a system?
 23 A. Had I have digested their emails fully and understood
 24 that, then yes, I would have done.
 25 Q. Right.

91

1 Did you have any further discussion with
 2 Claire Williams about this email run after 16 June?
 3 A. I don't recall. There was a lot of conversations and
 4 a lot of routes that were explored regarding
 5 ECO funding.
 6 Q. Right.
 7 Can I then go to {HAR00005834}. This is a day or
 8 two later where, on page 1, if we look at the second
 9 email, you write to Mark Harris on 18 June:
 10 "Hi Mark,
 11 "Following our discussion about Green Deal
 12 installers etc I've had a conversation with Tom Elliott
 13 of Rockwool (see bottom email) ..."
 14 Which is what you send on to him. You send the
 15 email chain we have just been looking at with
 16 Claire Williams on to Mark Harris, and you say:
 17 "... given him your details to discuss products and
 18 how it will fit within the grant funding. He seems very
 19 helpful, as you would expect when trying to sell a
 20 product, but also knows about grant funding. We may
 21 need to get a relationship with him and Reynobond if any
 22 grant funding is to be achieved.
 23 "He could also be a very good contact for all of us
 24 in the future as he only deals with the occupied tower
 25 block works so will know probably before any of us who's

92

1 getting work done.”
 2 Just looking at the relationship point there, what
 3 did you mean by “a relationship with Rockwool and
 4 Reynobond”, what did you envisage?
 5 A. Well, at this stage I’m still on the opinion that we’re
 6 just talking about insulation here. I believe so.
 7 Q. Right.
 8 A. Obviously Reynobond is being -- depending on the date is
 9 being discussed and shown to planners, et cetera,
 10 et cetera. So if you can take Rockwool’s grant funding
 11 and their product and use it with Reynobond, as we know
 12 worked previously, and still get grant funding, then
 13 that’s the -- that’s the optimum solution, and the
 14 quickest programme-wise, et cetera.
 15 Q. Right. But you knew that was impossible at that stage,
 16 didn’t you?
 17 A. I didn’t know that was impossible; I was asking them to
 18 explore whether that was possible or not.
 19 Q. I follow.
 20 Pursuing that a bit further, we can see an email on
 21 the same day at {RYD00009105}. Here I think we see you
 22 writing to Tom Elliott, putting him in touch with
 23 Harley, and you say this:
 24 “Please find my contact details below, email or
 25 mobile is the best to get me on. It would be good if we

93

1 can sort something out between yourselves and Harley
 2 Curtain Walling Ltd for this project. Harley curtain
 3 Walling are one of our best Supply Chain Partners and we
 4 have carried out a good number of Tower Block
 5 refurbishments with them. From memory they probably
 6 have all included the use of Rockwool products for the
 7 external insulation. Anyway speak to Mark Harris from
 8 Harley’s and if need be we can all get together for
 9 a chat.”
 10 We can see if we turn back to {HAR00005834} for
 11 a moment, where we were a moment ago, Mark Harris tells
 12 you that, having been put in touch, he will provide some
 13 feedback.
 14 My question is: do you know or can you remember
 15 whether he ever did do that?
 16 A. I believe he did. I believe there are emails and chains
 17 with conversations about Green Deal installers or the
 18 other qualifications that were needed. So yes --
 19 Q. Yes.
 20 A. -- I think there are some email about that.
 21 Q. Did you discuss with Harley changing the cladding
 22 products over to Rockwool or Rockpanel or either of the
 23 two?
 24 A. I don’t remember that much in-depth conversation. It
 25 was more a sales approach by Rockwool, and I passed on

94

1 to Harleys basically saying, “Please look at it”.
 2 Q. Okay.
 3 Let’s skip on a little bit, because there are other
 4 emails, but let’s look on to {RYD0009380}. This is now
 5 20 June. There seems to have been a discussion on
 6 18 June.
 7 Here we see that Mr Elliott emails you on
 8 20 June 2014 to explain that he had spoken to
 9 Mark Harris at Harley and clarified a number of things,
 10 and he says in the first main paragraph there:
 11 “I have spoken to Mark from [Harley] and explained
 12 the situation regarding the 25 years guarantee required
 13 in order to attract ECO funding. I have checked with
 14 our technical department, and we won’t be able to
 15 incorporate the Reynobond cladding with our insulation
 16 board, and still attract a 25 year guarantee. The only
 17 option would be utilise a Rockpanel board. In summary,
 18 the reason for this is that we (Rockwool) cannot
 19 guarantee the additional Reynobond components as they
 20 are an external company, but Rockpanel are a Rockwool
 21 Group company and therefore we are able/willing to take
 22 on the risk.
 23 “If we can get Rockpanel to match the zinc effect of
 24 the proposed panels and come to some sort of commercial
 25 agreement on price, do you think there would be an

95

1 interest from yourselves and the client to alter the
 2 specification? We would obviously keep any price
 3 variation to a minimum and the additional ECO funding
 4 may help to keep the costs in line with the client’s
 5 budgets.”
 6 That solution was then taken up, I think, in
 7 {RYD00009673}. This is an email of 24 June to
 8 Zak Maynard, which shows Mark Harris’ response to
 9 various questions in red.
 10 If we go to item 12 -- and this email is copied to
 11 you, as you can see on page 1, but if we go to page 2
 12 {RYD00009673/2} and item 12, we can see the question or
 13 the topic is:
 14 “Rockwool Duo-slab insulation to be used to ensure
 15 Eco Funding secured on the project - we have been
 16 contacted by Rockwool in this regard. They advise that
 17 unless they supply the cladding panels, rails, and
 18 insulation as a complete system, Eco Funding would not
 19 be available to the client on this project. Whilst we
 20 are happy to use Rockwool as an insulation product, our
 21 bid is based on using Reynobond panels, and aluminium
 22 rails from a supplier yet to be confirmed. I am not
 23 sure where we go with this?”
 24 Now, as I say, you were copied in to that email. Do
 25 you recall receiving it, do you think?

96

1 A. I don't recall that specific one, but yes, I did, and --
 2 Q. Right.
 3 Do you remember whether you asked Harley to do
 4 a cost comparison between a system with Reynobond and
 5 Celotex PIR as opposed to Rockwool and Rockpanel?
 6 A. If there was -- I don't recall one. If there was
 7 a request, it wouldn't have come from me --
 8 Q. Right.
 9 A. -- probably anyway. It probably would have come from
 10 the commercial department, or so Zak and/or one of the
 11 others.
 12 Q. Do you know from your involvement in this whether a cost
 13 comparison between one system, so Reynobond and Celotex
 14 PIR on the one hand and Rockwool and Rockpanel as
 15 another system plus ECO funding on the other, was done?
 16 A. No, I don't know. I don't --
 17 Q. We haven't seen anything to indicate that it was done.
 18 Can you explain why that is?
 19 A. No.
 20 Q. Right.
 21 Moving forward in the story to 2 July 2014,
 22 {RYD00011229}, this is an email from Tom Elliott of
 23 Rockwool to you, I think pushing you on a bit. Second
 24 email down on that page:
 25 "Hi Simon,

97

1 "Hope you are well.
 2 "Did you manage to resolve the situation with your
 3 appropriate guarantee and rainscreen system?
 4 "I'd still like to try and arrange a meeting at some
 5 point to see if we can get some projects up and running
 6 in the future. Are you free next week?"
 7 Simon Lawrence back to Tom Elliott:
 8 "Afternoon Tom,
 9 "Our energy brokers feel that there is a way around
 10 the 'whole system' scenario so shouldn't effect the
 11 ability to receive funding, apparently!"
 12 Then you talk about a meeting there.
 13 When was this discussion with your energy broker
 14 that you mention in this email, do you remember?
 15 A. I know we had talked to various brokers, for a better
 16 term, around what -- how else energy funding could be
 17 achieved.
 18 Q. Right.
 19 A. So there was probably three or four different energy
 20 specialists that we were talking to.
 21 Q. Was one of them Dave Brissenden?
 22 A. Yes.
 23 Q. Was Dave Brissenden the energy broker who expressed the
 24 opinion you were passing on to Tom Elliott here?
 25 A. I don't know, it could be one of -- like I say, I think

98

1 there was about three or four of them.
 2 Q. Right.
 3 When you were, as you say here, considering or
 4 discussing with them a way around the whole system
 5 scenario, was any consideration given, either by you or
 6 the energy brokers, so far as you could tell from
 7 talking to them, about fire performance of the full
 8 system?
 9 A. No. No, I think the energy -- or energy funding is
 10 relating to -- generally to thermal performance.
 11 Q. Right.
 12 Is it fair to say that at this point, early
 13 July 2014, it was looking like Rockwool was pretty
 14 unlikely to be used on this project as the insulation?
 15 A. I would have said that's probably -- that's probably
 16 fair, yes.
 17 Q. Yes.
 18 A. Not for definite, but probably fair.
 19 Q. Right.
 20 Was that because, in order to get grant funding, you
 21 would have had to have used it with Rockpanel as opposed
 22 to Reynobond?
 23 A. Yes. At that time, in July, we were -- we had,
 24 I believe, discussions with planners going on, with lots
 25 of different options of colours and mock-ups, et cetera,

99

1 et cetera. We then had -- also then had the grant
 2 funding to investigate which we were with, like I say,
 3 three or four different energy brokers. So there was
 4 quite a lot going on.
 5 So to take what I class as a sales email from a --
 6 quite a hard sales email, because he's persistent,
 7 basically saying, "Change your whole system, come to
 8 us" -- you know, we had quite a lot of balls in the air,
 9 so to speak, at that stage. So whilst we looked into
 10 it, we weren't going to drop all the other progress just
 11 to focus on one sales email from one manufacturer.
 12 Q. To what extent was your reluctance to embrace the
 13 Rockwool, Rockpanel and ECO funding option, if I can use
 14 an expression, driven by your reluctance to give up
 15 using Reynobond PE 55 ACM as the rainscreen material?
 16 A. There was no reluctance relating to relationship or
 17 Reynobond as a material itself; it was more of a time
 18 pressure and the amount of work that would be needed to
 19 completely change a system again. So the design had
 20 already -- the design intent had already progressed
 21 through to stage D, stage E, as we spoke about the other
 22 day, so there has been a lot of work done to date to get
 23 it to a scheme. We would then spend a lot of time
 24 changing that scheme to fit the client's budgets. To
 25 then add in another option in the mix along with

100

1 everything else that was going on, is quite complex.
 2 Q. Now, can I ask you to look at {RYD00013698}. This is
 3 an email from Jason Bethel to you, copied to
 4 Zak Maynard, dated 25 July 2014, and it's a response to
 5 an email from you to him on 24 July, and he says:
 6 "Simon,
 7 "Please find attached the revised material only Eco
 8 Funding insulation cost including the access equipment
 9 as requested."
 10 Why did you request that, do you remember?
 11 A. I don't remember this email chain at all.
 12 Q. Let's look at the attachment that he put on that email.
 13 It's {RYD00013699}, and I would like the native version
 14 of that, please.
 15 Now, help me with this document. It looks as if
 16 it's showing that the cost of the insulation for the
 17 whole tower, Grenfell Tower, was a total of £187,931.50,
 18 including Rydon's margin of 12.5%. Is that correct?
 19 A. That appears correct, yes.
 20 Q. Right.
 21 Now, you had, as we've seen, I think, a contractual
 22 obligation to suggest economically viable amendments to
 23 the works which, if instructed as a change, may result
 24 in an improvement to the environmental performance in
 25 carrying out the works or the completed works; do you

101

1 remember that?
 2 A. I don't remember it, but yes, okay.
 3 Q. Okay. Therefore, would you accept that if a product is
 4 attracting ECO funding, it may well result in
 5 an improvement in the environmental performance as well
 6 as cost?
 7 A. It could do.
 8 Q. Did you ever get as far as discovering what the cost of
 9 using Rockwool's insulation with or without the
 10 Rockpanel was?
 11 A. Not that I recall, no.
 12 Q. Given that you had a contractual obligation to check if
 13 the Rockwool system was economically viable, can I ask
 14 you to explain why you didn't look at that?
 15 A. I'm not sure I can explain, but are you implying that we
 16 should look at every product on the market and market
 17 test every product? Is that what --
 18 Q. Well, I'm asking you a question based on your, as in
 19 Rydon's, contractual obligation to suggest economically
 20 viable amendments which, if accepted, might result in
 21 an improvement in environmental performance. Given that
 22 the use of the Rockwool system at least was marketed as
 23 doing so, my question is: why did you never investigate
 24 whether adopting the Rockwool system was economically
 25 an advantage?

102

1 A. I don't know.
 2 Q. I would like to move forward in time a little bit to
 3 October 2014, and still sticking with the Rockwool story
 4 at the moment. We talked about Mr Brissenden earlier.
 5 Can I ask you to look at {RYD00021252}. This is
 6 an email from you to David Brissenden on
 7 15 October 2014, copied among others to David Gibson and
 8 Claire Williams.
 9 If you look at the totality of it, it refers to
 10 a conversation, and an email from the previous week, and
 11 it's got topics and answers, and I think your answers
 12 are in blue; is that right?
 13 A. Yes, yes.
 14 Q. We can look at the email below it if you like.
 15 A. Yes.
 16 Q. Right.
 17 Now, you have provided information in there about
 18 the projects in your continued attempts to procure
 19 ECO funding.
 20 So, first of all, can we take it that, even at this
 21 stage, October 2014, you are still looking at getting
 22 ECO funding for the rainscreen system, the cladding
 23 system?
 24 A. Yes, we were looking at ECO funding for the whole
 25 building, not just the cladding system. That also

103

1 involved the communal heating plant, et cetera. So,
 2 yes.
 3 Q. Yes, I follow.
 4 Now, about two-thirds of the way down the big block
 5 of text in the middle of that page, in black it says:
 6 "EWI specs: Ideally u-value of the product, material
 7 specs."
 8 Do you see that?
 9 A. Yes.
 10 Q. Then the blue is:
 11 "The external cladding is a Aluminium Rainscreen
 12 system (Reynobond) with 160mm Rockwool external wall
 13 insulation behind. Average u-value to achieve
 14 0.15 W/m2K.
 15 "Flat roof or pitched: [and the answer in blue] Flat
 16 roof around and on plant room. It has been previously
 17 insulated. - This isn't part of our scope of works."
 18 When you said 160 millimetres Rockwool external wall
 19 insulation behind, that wasn't right, was it?
 20 A. No, I think that's a typo.
 21 Q. A typo? Okay, so that's a mistake?
 22 A. I think it's a mistake.
 23 Q. Okay.
 24 How far along had your discussions with Rockwool
 25 progressed at this point?

104

1 A. Without seeing -- going back to the emails and knowing
 2 the date sequence -- I believe you have got all the
 3 emails that -- any correspondence with Rockwool, so
 4 I think it had probably stopped at the last email that
 5 we had seen, but ...
 6 Q. Now, you say that Rockwool there as a reference is
 7 a mistake.
 8 A. I think that's just a pure mistake, yeah.
 9 Q. Did either David Gibson or Claire Williams or indeed
 10 Nick Valente, who was Artelia, pick you up on that
 11 mistake?
 12 A. I don't believe so.
 13 Q. No.
 14 Then can I turn to a different topic, which is
 15 Harley RFI. I would ask you to start, please, with me
 16 by looking at {RYD00018154/3}. That's an email from
 17 Daniel Anketell-Jones to you, Simon O'Connor,
 18 Neil Crawford and Bruce Sounes of 17 September 2014. In
 19 it he refers to and attaches RFI001, he says, which
 20 relates to the requirements of firebreaks. He goes on
 21 to say:
 22 "This may be something that has already been
 23 decided, or may need confirmation from the local fire
 24 officer, as the opinion tends to vary."
 25 Do you see that?

105

1 A. Yes.
 2 Q. We can't see from this email that there is
 3 an attachment, but there was.
 4 Did you read the attachment?
 5 A. I can't recall, but it was probably a standard RFI
 6 template sheet from Harleys.
 7 Q. Right. Let's have a look. If you go to {HAR00003616},
 8 please, that's I imagine what you are referring to as
 9 a standard RFI template sheet from Harleys?
 10 A. Yes.
 11 Q. This is number 1, 17 September 2014, you can see the
 12 date on the right-hand side. Date answer is required:
 13 26 September 2014. Then the query is:
 14 "Please may you confirm the required extent of the
 15 horizontal firebreaks within the cladding areas?"
 16 Then "Suggested Solution":
 17 "We believe that they will be required at every
 18 floor level on the vertical columns, but not in the area
 19 of cladding between windows. This is because there is
 20 no 'chimney' effect here, and therefore the cladding
 21 will not add to the spread of fire."
 22 Now, were you conscious at the time that you
 23 personally didn't have the expertise to advise on the
 24 extent of the horizontal firebreaks within the cladding
 25 areas?

106

1 A. Yes, I was conscious of that.
 2 Q. And were you conscious that Rydon as a company didn't
 3 have the in-house expertise to advise on the extent of
 4 horizontal firebreaks within the cladding areas?
 5 A. Yes.
 6 Q. We know, and I think you have told us, that Rydon were
 7 relying on Harley to advise on the appropriate design
 8 for the façade, including the cavity barriers.
 9 A. Yes.
 10 Q. That is, I should be clear for you, what the Rydon
 11 company statement says at paragraph 390.
 12 A. Yes.
 13 Q. And you agree with that, I think.
 14 A. Yes.
 15 Q. But is it right that we see here your specialist
 16 subcontractor, on whom you say you were relying, asking
 17 you for an answer to this question?
 18 A. Well, they're asking Studio E but referencing myself.
 19 So they're asking Studio E if they agree with their
 20 assumptions on the cavity barriers.
 21 Q. When you say they're asking Studio E, are you referring
 22 to the request for information form or the email to
 23 which it was attached?
 24 A. Well, both, because I think Studio E -- I wouldn't
 25 answer -- that is not for me to answer or for me to be

107

1 able to answer. I would take that and pass that
 2 straight to Studio E for their comment and then, if
 3 needed, Building Control's control.
 4 Q. Right. Okay.
 5 We have seen from the email, and I showed you this,
 6 that the email went to you and Simon O'Connor but also
 7 Neil Crawford and Bruce Sounes.
 8 A. Yes.
 9 Q. So was it your understanding that, although the RFI came
 10 to you, in fact --
 11 A. Yes.
 12 Q. -- your understanding was that it would be Studio E who
 13 would answer it?
 14 A. Yes, as I think we saw the example of which yesterday or
 15 the day before.
 16 Q. Did you have any thoughts at the time about whether
 17 Studio E might have been able to respond fully and
 18 professionally?
 19 A. I didn't have any -- I didn't have any negative thoughts
 20 about that. I would expect them to -- as is usual with
 21 design as it moves forward, there's quite often
 22 interpretations and discussions between designers. So,
 23 yeah, I would expect Studio E as a lead architect to be
 24 able to look at it and say, "Yeah, I agree" or "No,
 25 I don't agree" or "Let's go and get it checked".

108

1 Q. Did you have any discussion with Studio E about whether
2 they were capable or qualified or able to answer this
3 question?
4 A. Not as direct as that, no.
5 Q. Less directly?
6 A. Well, on the assumption that they're contracted to do so
7 and that they are a lead designer and a professional
8 architect, I would expect them to be able to comment on
9 these, even if it is, "We need to seek further advice".
10 Q. Did it cross your mind that you may have needed to seek
11 advice from a specialist third-party fire safety
12 engineer in order to answer this question?
13 A. It crossed my mind that we would probably -- well, at
14 the time that it would probably end up with
15 Building Control and to understand their interpretation.
16 Q. Oh, I see. So even on receipt of this information --
17 let me just see if I can understand your thought process
18 here.
19 On receipt of this information, did you think,
20 "Building Control can answer this", or did you think,
21 "Actually, this is something for Studio E"?
22 A. I saw it as Studio E to deal with.
23 Q. Right.
24 A. But whether they could answer -- I can't answer for them
25 if they can answer that specific question or whether

109

1 they --
2 Q. Indeed.
3 A. -- would need it clarified further by another party.
4 Q. Right.
5 Now, if you go to the email we looked at earlier,
6 {RYD00018154}, which is the email run we were on, we
7 were on page 3 {RYD00018154/3} where the RFI was
8 attached, and we can see from the next email up on
9 page 3 and running on to page 2 {RYD00018154/2} -- it
10 starts on page 2 -- that on 18 September, Neil Crawford
11 passes this RFI on to Terry Ashton, copied to you and
12 Simon O'Connor. Do you see that?
13 A. Yes.
14 Q. He asks Mr Ashton, as we can see from the top of page 3:
15 "Can you comment on the RFI attached and whether you
16 believe this interpretation in relation to stack effect
17 is correct?
18 "Regards
19 "Neil."
20 Were you surprised at this point in the project --
21 so some three months or so after construction had
22 actually started on site -- that Studio E were seeking
23 clarification on this matter from Exova?
24 A. When you say construction had started on site, we were
25 doing enabling works. So, yes, construction had

110

1 started, but I don't believe any of the cladding or any
2 of that had started.
3 Q. Right.
4 A. So just to clarify that, because ...
5 Q. Well, following --
6 A. At the time, I'm not even sure if I would have
7 necessarily seen it and read it before Neil passed it
8 on, or had any more thoughts about it than that, to be
9 fair.
10 Q. Should this kind of question not have been resolved
11 before even the enabling works had been started?
12 A. As to what firebreaks were needed in the cladding?
13 Q. Yes.
14 A. When the cladding wasn't installed or the design wasn't
15 fully complete?
16 Q. Well, that's the question, the design wasn't fully
17 complete.
18 A. I would say that's commonplace in my experience in the
19 construction process, that you often start before the
20 design -- the complete design for the whole building is
21 fully developed, signed off and finished. I think
22 that's --
23 Q. Right. So you had no concerns about the timing of this
24 question.
25 Did the fact that Mr Crawford was sending this

111

1 message to Mr Ashton at Exova and asking him to comment
2 not ring alarm bells with you that neither your
3 specialist subcontractor, Harley, nor your architect
4 knew the answer to this question?
5 A. At the time, no, I didn't. No, I didn't read it like
6 that, no.
7 Q. Did it not occur to you that now in fact you ought to be
8 instructing Exova as a fire consultant?
9 A. No, because Building Control were still -- there was
10 still the option to go to Building Control and ask them
11 to explain the -- or give advice on the regulations of
12 the position of the firebreaks, so ...
13 Q. I see. So even though, as we saw yesterday, by this
14 time, which is mid-September, we had had, I think, four
15 occasions of meetings when you had said you were looking
16 at either using Exova going forward or appointing a fire
17 specialist -- you remember the meetings where that kept
18 being said?
19 A. Which we were considering for the lower four floors, but
20 yes.
21 Q. Even with that qualification, which I understood you
22 made yesterday, of course, did this exchange and the
23 fact that Neil Crawford was going to Mr Ashton to answer
24 the question not trigger a thought with you: oh, well,
25 perhaps we should be instructing a specialist fire

112

1 engineer, as we have been looking at through the year so
 2 far?
 3 A. No.
 4 Q. Why is that?
 5 A. Because it still -- the answer hadn't been fully
 6 resolved, it had not been fully explored. They had
 7 still not gone to Building Control at this stage.
 8 Q. Now, in his response on page 2 {RYD00018154/2}, if we
 9 just scroll back to that, please, Mr Ashton comes back
 10 to Mr Crawford the same day and says, and you're not
 11 copied in on this:
 12 "Neil
 13 "I've never seen details of what you're doing to the
 14 external walls. Do you have any cross
 15 sections/elevations?"
 16 Neil Crawford goes back to Terry Ashton the same
 17 day, again not copied to you, and says:
 18 "Hi Terry
 19 "Please see attached our sections and the initial
 20 drawings set we have had from Harleys. The initial
 21 drawings from Harleys are fairly limited but they
 22 attempt to establish the basic approach."
 23 Did you discover, even though you're not copied in
 24 on this email, the fact that Terry Ashton had never seen
 25 any detail of the external wall construction?

113

1 A. I'm not sure I would have read all the emails in the
 2 chain, if I was eventually copied in to that. So, no,
 3 I wasn't -- I hadn't picked up on that point, no.
 4 Q. Well, we can pursue the email chain a little bit
 5 further, because we do see that you see these a little
 6 bit later on, on that day. Let's just pursue this
 7 a little further.
 8 If you go a little higher up the page
 9 {RYD00018154/1}, we can see the email that
 10 Daniel Anketell-Jones sends to Neil Crawford on
 11 18 September 2014 at 16.03, and this time you're copied
 12 in.
 13 I'm so sorry, I've taken the wrong one, actually,
 14 it's the one below that, the email of 18 September from
 15 Neil Crawford back to Daniel Anketell-Jones where he
 16 sets out the correspondence below. You see that?
 17 A. Yes.
 18 Q. Do you remember whether you saw the attachments to the
 19 email that Neil Crawford had sent?
 20 A. I don't recall.
 21 Q. Right. Well, let's see if we can find one of those.
 22 {EX000000710}. This is a drawing, 1279 (06) 120, and
 23 you get that from the bottom right-hand corner in the
 24 usual way. This is detail section 1.
 25 If you look at the left-hand side, if we can blow it

114

1 up, a third of the way up, it shows the insulation.
 2 About a third of the way up from the bottom, if we can
 3 turn that up and expand it, it shows the insulation and
 4 refers to the specification H92/776. Do you see that?
 5 A. Yes.
 6 Q. Thank you.
 7 Now, Mr Ashton it doesn't seem was sent the NBS
 8 specification at this point which identified
 9 Celotex FR5000, was he, so far as you could tell?
 10 A. I don't know, but if that's what it's showing ...
 11 Q. Do you know from your own knowledge whether Mr Ashton
 12 had already been provided with the NBS specification so
 13 that he could look at it?
 14 A. Going back to originally, I would have assumed so
 15 because of Exova's report within the tender documents,
 16 but reading this now, potentially not.
 17 Q. Right.
 18 You say because of Exova's report. That's issue 3,
 19 7 November 2013, within the tender documents.
 20 A. Yes.
 21 Q. But you had no way of knowing whether Mr Ashton, who had
 22 authored that document, had actually been provided with
 23 the NBS spec at the date that it was produced?
 24 A. No, I think we covered this --
 25 Q. We covered this yesterday.

115

1 Can we take it that you, when you saw this, didn't
 2 think, "Well, I had better be sure that Mr Ashton has
 3 got the spec as well?"
 4 A. I'm not sure I would be -- in fact, I'm sure that
 5 I wouldn't be covering the email exchange as closely as
 6 possibly I could have done. At the moment the email
 7 exchange is between two of the design team, copying me
 8 in and Simon O'Connor in, keeping us informed as
 9 I discussed.
 10 Q. Right.
 11 Going back, if we can, please, to page 1 of the
 12 email chain, {RYD00018154}, we can see on page 1 you're
 13 copied in, as we've just seen, to the response from
 14 Neil Crawford:
 15 "Daniel
 16 "Please see correspondence relating to RFI001/Cavity
 17 Barrier requirement below."
 18 You see that?
 19 A. Yes.
 20 Q. You can see from the earlier correspondence lower down
 21 that he hadn't been provided with the external wall
 22 construction. Did that concern you? Were you concerned
 23 when you discovered that Mr Ashton hadn't been provided
 24 at any stage with the detail of the external wall
 25 composition?

116

1 A. It concerns me now because I've only just found out,
 2 post the fire. I hadn't noticed that previously.
 3 Q. It was in the email you got.
 4 A. That doesn't mean to say I've noticed it, does it?
 5 Unfortunately. I would like to say that --
 6 Q. All right. Okay.
 7 Does that tell us that you didn't address your mind
 8 to the question at the time as to whether Terry Ashton
 9 should now immediately be provided with the external
 10 wall build-up?
 11 A. Correct, because I hadn't noticed it.
 12 Q. Right.
 13 Now, if we turn to the third email in that chain
 14 from the top, bottom of page 1. This is prior to you
 15 seeing it, it's the last one before you're copied in,
 16 same day, Terry Ashton to Neil Crawford:
 17 "Neil
 18 "If the insulation in the cavities behind the
 19 rainscreen cladding is combustible you will need to
 20 provide cavity barrier as shown on your drawing [and he
 21 refers to the drawing] ... in order to prevent fire from
 22 spreading from one flat to the one above even if there
 23 isn't a continuous cavity from the top to the bottom of
 24 the building."
 25 You then see that email in a copy a few minutes

117

1 later, because it's copied on.
 2 Did you at the time notice this email exchange and
 3 what he is saying about combustibility?
 4 A. No.
 5 Q. Did it occur to you that combustible insulation might
 6 not be permitted behind the rainscreen on this project?
 7 A. I didn't know and it didn't occur to me because I hadn't
 8 read that email.
 9 Q. Right.
 10 A. Or digested that email.
 11 Q. Does it follow that at this stage you had given no
 12 thought and were not alerted to the fact that the
 13 guidance in Approved Document B required the insulation
 14 in this external build-up to be of limited
 15 combustibility as defined?
 16 A. No, because I think, as we've previously mentioned, I'm
 17 relying on third parties to understand that information
 18 on behalf of Rydon, on behalf of myself, because we
 19 haven't got that expertise.
 20 Q. Right.
 21 I know you can't remember opening the drawings that
 22 we looked at a moment ago, but do we take it from that
 23 that you didn't notice that the drawings did not include
 24 the provision of cavity barriers around the window
 25 openings?

118

1 A. No, I didn't notice.
 2 Q. Is there a reason why you were not interested enough to
 3 open the drawings and examine them?
 4 A. I think "interested enough" is unfair.
 5 Q. Right.
 6 A. I think that there are lots of email correspondence that
 7 goes between design parties, whether it be
 8 subcontractors and the architect. For me to open every
 9 single one of them, digest them, fully understand them,
 10 comment on every single one of them, when I've got two
 11 technical people having a discussion, then no, I don't
 12 think it's possible to open every single email, fully
 13 digest it, fully understand it, so ...
 14 Q. I'm sorry, Mr Lawrence, I don't mean to be unfair to
 15 you, but --
 16 A. Sorry.
 17 Q. -- the reason I ask the question is that from the TMO's
 18 perspective, and given the contract you had with the
 19 TMO, it would suggest that they would expect you to open
 20 every drawing and be interested because you had promised
 21 to do what you had promised in your contract.
 22 A. Okay.
 23 Q. That's why I asked the question.
 24 Now, did you notice the fact that -- well, let me
 25 ask you this: are you familiar with Approved Document B

119

1 and particularly section 9 and diagram 33?
 2 A. No.
 3 Q. No.
 4 Did you notice the fact that Mr Ashton didn't
 5 comment on the absence of cavity barriers directly below
 6 or to the side of the windows?
 7 A. No.
 8 Q. Or in the crown area?
 9 A. No.
 10 Q. No.
 11 Did you make any assumption one way or the other
 12 that the drawings were correct?
 13 A. No.
 14 Q. Now, looking at the very top of this email, that again
 15 you're copied in to this time, this is from
 16 Daniel Anketell-Jones to Neil Crawford:
 17 "Neil,
 18 "Thank you for your response.
 19 "The insulation is class 0 ... Therefore after
 20 reading the correspondence below; I believe that the
 21 fire barrier in these locations, will not be necessary.
 22 "Can you confirm that this is acceptable?"
 23 Just focusing on, "The insulation is class 0", did
 24 that statement register with you at the time?
 25 A. No, not particularly, no.

120

1 Q. Right.

2 Were you aware, or conscious, perhaps is a better
3 word, of the guidance in ADB paragraph 12.7 that, in
4 a building with storeys of 18 metres or more above
5 ground level, any insulation product used in the
6 external wall construction had to be or should be, as
7 the guidance says, of limited combustibility?

8 A. No.

9 Q. No.

10 Does it follow from that that it didn't occur to you
11 that Mr Anketell-Jones had perhaps misunderstood, and
12 had misunderstood specifically the difference between
13 class 0 and limited combustibility?

14 A. It didn't occur to me. It's a technical conversation
15 between two designers, so no.

16 Q. Can we carry on with this in the chronology. If you
17 look at {SEA00011730/1} and {SEA00011730/2} and put them
18 up together, this is an email chain between
19 Neil Crawford and Terry Ashton, also on
20 18 September 2014, and you were copied in on this, if we
21 look at the top of page 1. We can see at the top of
22 page 2, which is the next item up, after the one we have
23 been looking at, where he says:

24 "Terry

25 "Is this interpretation correct ...?"

121

1 So you can see that Neil Crawford checked
2 Daniel Anketell-Jones of Harley's advice with
3 Terry Ashton of Exova and asks that question.

4 Then if you go to the foot of page 1 we can see
5 Terry Ashton's response back to Neil Crawford. Do you
6 see that?

7 A. Yes.

8 Q. You're not copied in on that, but you are copied in on
9 the next email which comes from Neil Crawford back to
10 Terry. At the foot of page 1 Terry Ashton says:

11 "A material which has a Class 0 rating is not
12 necessarily non-combustible although the reverse is
13 invariably true. Some Class 0 products will burn when
14 exposed to a fully developed fire. In any case, you
15 need to prevent fire spread from on flat to the flat
16 above as I stated in my earlier email. What isn't clear
17 from the information to hand is whether or not there is
18 a continuous cavity from top to bottom in any part of
19 the cladding (apart from around the column casings)
20 irrespective of the type of insulation?"

21 We can see that although you don't get that email,
22 you do get the response, as I say, because you're copied
23 in to that.

24 When you saw that email chain, did you read
25 Mr Ashton's email to Mr Crawford that I've just read out

122

1 to you?

2 A. I don't -- I recall it from prepping for this, but at
3 the time I don't recall it.

4 Q. All right.

5 Did you make anything at the time of the statement
6 that a class 0 material was not necessarily
7 non-combustible?

8 A. No, because I don't recall reading it and digesting it.

9 Q. Okay. So it didn't trigger anything with you at the
10 time?

11 A. No, because I don't recall reading it or digesting it.

12 Q. Now, Mr Ashton says in his email to Neil Crawford that
13 he didn't have sufficient information to hand to see
14 whether or not there is a continuous cavity from top to
15 bottom in any part of the cladding apart from round the
16 column casings.

17 I know you don't recall reading this email chain,
18 but do you recall having any concern at all at the time
19 that Mr Ashton did not have sufficient information to be
20 able to determine the extent of the wall cavity?

21 A. No, because I had not seen it and digested and it noted
22 it.

23 Q. Right.

24 After this email was copied to you later on the same
25 afternoon, did you do any further investigation to

123

1 satisfy yourself that the insulation was compliant with
2 the Building Regulations?

3 A. No.

4 Q. Given that it was Rydon's contractual responsibility to
5 ensure that the insulation was compliant with the
6 Building Regulations, who did you consider was
7 responsible for making sure that that obligation was
8 complied with?

9 A. I would expect Harleys to do the design, I would expect
10 Studio E to check that design to the best of their
11 knowledge, and I would expect then Studio E to take that
12 to Building Control and have a conversation with
13 Building Control.

14 Q. And the same question in respect of the design of the
15 cavity barriers.

16 A. Yes. Yeah.

17 Q. Do we take it that, because you were relying on them and
18 trusted them from your experience, you didn't take any
19 steps yourself to ensure that they were discharging that
20 responsibility?

21 A. I think by all the email trails, they were --

22 Q. Right.

23 A. -- seeking that advice.

24 Q. So you took it from the email trails that they were?

25 A. Well, I've seen all the email trails obviously since,

124

1 I have re-read them all since, but we know that there
2 was conversations with Studio E, ourselves at times,
3 Building Control, Harleys. So by the fact that
4 everybody was talking, and advice was being shared
5 backwards and forwards, I believe that they were what
6 they should be doing.

7 MR MILLETT: Right.

8 Mr Chairman, I'm going to turn to a slightly
9 different topic. I know we are a couple of minutes
10 early but --

11 SIR MARTIN MOORE-BICK: That would be a good point, would
12 it?

13 MR MILLETT: -- we are well on track, so if we may.

14 SIR MARTIN MOORE-BICK: Before we break, Mr Lawrence, can
15 I ask you this: I get the impression from that range of
16 answers that you gave in respect of emails that you had
17 a huge amount of email traffic passing across your
18 computer, and perhaps, in your view, neither the time
19 or, dare I suggest, the inclination to read it all in
20 detail. Would that be a fair inference?

21 A. Yeah, I wouldn't say inclination, because if I obviously
22 had the time, I would love to study every single email.
23 But, yes, there is a lot of email traffic -- not just on
24 this project, on other projects -- and a lot of subjects
25 being discussed. So, yes, for me to understand

125

1 technically between two designers and get involved in
2 that from a technical perspective, yeah, I wouldn't --
3 I wouldn't --

4 SIR MARTIN MOORE-BICK: I wonder whether you felt that you
5 had enough support, in other words whether you had
6 an assistant who could perhaps spend a bit more time
7 than you could looking into the emails and the
8 attachments and so on?

9 A. Well, we had the site team and obviously Simon O'Connor
10 was the project manager based on site, so he would have
11 seen and been involved in that. But, again, I don't
12 think when it comes to technical design that, apart from
13 our input on co-ordination and buildability, if we could
14 input on that -- yeah, I wouldn't be pulling the regs
15 apart, pulling all the email trails apart and
16 understanding all that, no.

17 SIR MARTIN MOORE-BICK: I mean, do you think you had enough
18 support is really what I'm asking you?

19 A. I think it's typical of a -- typical of the job.
20 I would always love another 20 people, but everybody
21 would always love another 20 people.

22 SIR MARTIN MOORE-BICK: I was thinking of one more person,
23 to be honest.

24 A. I think there was a full team there, so ... yeah.

25 SIR MARTIN MOORE-BICK: All right, thank you.

126

1 We will have a break now for some lunch.

2 THE WITNESS: Thank you.

3 SIR MARTIN MOORE-BICK: Please remember not to talk to
4 anyone about your evidence or the matters relating to
5 it, and we will resume at 2 o'clock, please.

6 THE WITNESS: Thank you.

7 SIR MARTIN MOORE-BICK: Thank you very much. Would you like
8 to go with the usher, please.

9 (Pause)

10 Right, 2 o'clock, then, please. Thank you.

11 (1.00 pm)

12 (The short adjournment)

13 (2.00 pm)

14 SIR MARTIN MOORE-BICK: All right, Mr Lawrence?

15 THE WITNESS: Yes, thank you.

16 SIR MARTIN MOORE-BICK: Mr Millett.

17 MR MILLETT: Mr Chairman.

18 Mr Lawrence, just picking up a thread that we let
19 drop before the lunch break: on this project, was there
20 a project lead in the sense of -- well, were you the
21 project lead within Rydon?

22 A. Well, I was the -- responsible for the delivery of the
23 contract, so yes, contracts manager, but I wasn't
24 site-based. The project lead on site was
25 Simon O'Connor.

127

1 Q. Yes. But in your role, are we to understand that you
2 yourself did not have a personal assistant?

3 A. Correct.

4 Q. Right. So you had nobody with experience of
5 administering construction programmes, deliverables,
6 RFIs, to act as your second pair of hands?

7 A. No. I mean, Simon O'Connor would pick up some of that,
8 but no, I didn't have a sort of PA or a contract
9 manager's assistant, no.

10 Q. Was there a work package, or WP, design lead?

11 A. We had split the team, so project -- so Simon O'Connor
12 would be the project manager for the site, so
13 concentrate purely on that project, as in Grenfell. So
14 site-based, he would oversee -- I mean, a lot of our
15 roles would overlap, but he obviously was only
16 concentrating on Grenfell and no other at the time. And
17 then from that we would then have our management who
18 would look after -- it would either be divided into
19 subcontractors or work areas or ... yeah, it varied
20 depending on the works.

21 Q. Right.

22 Who would it be within Rydon who would have, as it
23 were, their finger on the pulse of the work of the
24 subconsultants or subcontractors, probing them,
25 monitoring, supervising them, and making sure that the

128

1 individual work packages were keeping on track?
 2 A. It would be a combination of me and Simon.
 3 Q. I see, okay.
 4 Now, can I then turn to the next topic, which is
 5 RS5000 information.
 6 Can I ask you to look at the RS5000 datasheet, first
 7 of all, {RYD00039507}. This is the RS5000 issue 1
 8 datasheet, as you can see from the top right-hand
 9 corner, issue 1, August 2014. Do you see that?
 10 A. Yes.
 11 Q. Do you remember reading that document at any stage?
 12 A. I had -- yes, I had seen it, but I think like the BBA
 13 certification we were talking about earlier, it's not
 14 something that I would have pulled apart every single
 15 word. But, yes, I had seen it, and I think there might
 16 even have been a sales brochure promoting the use for --
 17 suitable for rainscreen over 18 metres.
 18 Q. Right.
 19 Let's look at page 1 of the document. We can see
 20 that it says:
 21 "With Celotex RS5000 you are specifying an
 22 insulation board that:
 23 •" Features a super low lambda value of 0.021W/mK
 24 offering enhanced thermal performance.
 25 •" Is the first PIR insulation board to successfully

129

1 test to BS 8414-2:200S, meet the criteria set out in
 2 BR 135 and therefore is acceptable for use in buildings
 3 above 18 metres in height.
 4 •" Has Class 0 fire performance throughout the
 5 entire product in accordance with BS 476."
 6 When you read this document, did you read those
 7 statements in there?
 8 A. I probably -- yeah, I probably would have focused on the
 9 introduction part of it more than anything. So I was
 10 going to say cursory look, but that sounds
 11 inappropriate, knowing what's happened. But, yes, it
 12 would have been a high-level look at the document.
 13 Q. Let's just pin you down a bit more on what you mean by
 14 introductory part, or introduction part.
 15 Did you notice what was said in the big red banner
 16 at the top?
 17 A. I'm sure I would have done.
 18 Q. Including "suitable for buildings above 18 metres in
 19 height"?
 20 A. Yes. Yeah. How much further I got past that and
 21 probably the first paragraph, I'm not sure.
 22 Q. And you'll see in the first paragraph, the last sentence
 23 concludes:
 24 "... and therefore is acceptable for use in
 25 buildings above 18 metres height."

130

1 Did you focus on that? Did you notice it?
 2 A. I would have noticed that part of it, yes.
 3 Q. Okay.
 4 Do I take it from that that you didn't notice or
 5 didn't pay as much attention to the three technical
 6 bullet points I've read out to you as set out below?
 7 A. No, probably not. No.
 8 Q. Let's look at page 3 {RYD00039507/3} of the document,
 9 because we find here further information about the
 10 certification. It says "Certification" and then there
 11 are some details set out there. Did you look at that,
 12 do you remember?
 13 A. I don't remember looking at that.
 14 Q. Right.
 15 Let's look at this. Did you look at the last few
 16 lines in there, just to see if this triggers some kind
 17 of recollection:
 18 "The fire performance and classification report
 19 issued only relates to the components detailed above.
 20 Any changes to the components listed will need to be
 21 considered by the building designer."
 22 Do you think you read that statement?
 23 A. I wouldn't have noticed it, no.
 24 Q. You wouldn't have noticed it, right.
 25 A. I've -- obviously since and preparing for it, yes,

131

1 I have.
 2 Q. Yes.
 3 A. This has obviously been flagged up. But at the time,
 4 no.
 5 Q. But as a reasonably competent contracts manager on
 6 a project like this, would it have been normal for you
 7 to have read that in full and understood it?
 8 A. No, I don't think it would have been normal, no, because
 9 there's technical information in there that I couldn't
 10 interpret.
 11 Q. Right.
 12 A. Again, it would be more of a: is there some sort of
 13 certification? You know, is it a -- I was going to say
 14 a suitable product, without going into the in-depth
 15 technical side of it.
 16 Q. Right.
 17 To your knowledge, did the designer of the cladding
 18 system for Grenfell Tower, whoever that was, ever
 19 actually consider the actual components of the cladding
 20 system to see whether they were comparable to the system
 21 tested by Celotex for the purposes of 8414?
 22 A. The answer is that I don't know. I would have assumed
 23 that Harleys would have the knowledge of Celotex, and
 24 the other designers.
 25 Q. Right.

132

1 To the extent that the actual components of the
2 cladding system as applied to Grenfell Tower were
3 different from the cladding system as tested for the
4 purposes of BS 8414, would you accept that no reliance
5 should have been placed by you or anybody else involved
6 in this project on this certification?

7 A. In hindsight and now knowing this, then yes, I accept
8 that.

9 Q. Do you recall either you or anybody else at Rydon
10 talking directly to Celotex about the suitability of
11 this product, FR5000 and then RS5000, as insulation at
12 Grenfell?

13 A. I don't recall anything, no.

14 Q. Now, let's just look at the system specification
15 involving this for the moment.

16 Can I ask you to look at an email {RYD00000421},
17 please. This is an email from you to Mr Brissenden of
18 22 April 2015. This is when you sent it to him, and we
19 can look at the email, but this is the system
20 specification.

21 First of all, does this document look familiar to
22 you, sitting here now?

23 A. The document does, yes.

24 Q. Yes. When do you think you saw it? I have given you
25 a date of April 2015, but ...

133

1 A. Yeah, I'll have to take your word for that, I don't
2 know.

3 Q. Maybe that doesn't matter. You confirm that you saw it
4 at the time.

5 A. Yeah.

6 Q. Can I ask you to look at the system as shown on the
7 left-hand side in the second line there, and it says:

8 "System

9 "Metal technology 5-20 Hi thermally broken aluminium
10 windows.

11 "Reynobond composite rainscreen cassettes."

12 Do you remember where you got this document from?

13 A. Well, it would have come from Harleys, so ...

14 Q. Right.

15 I'll take you back to the email to see if I can pin
16 this down in time. It is {RYD00039517}, please. Here
17 is the email you sent to Mr Brissenden on that date, and
18 you sent the RS5000 product datasheet and the general
19 system spec notes, and we've checked those out and the
20 specification is indeed the one that you say you got
21 from Harleys. You don't need to understand anything of
22 the text of the email, but it gives you a date as to
23 when at least you had seen it.

24 Do you remember the circumstances in which you got
25 the system specification document from Harley?

134

1 A. In which I got it? I mean, the conversation with
2 David Brissenden is all reliant on the ECO funding, as
3 we were talking about prior to the break, but whether
4 I ... whether we had that product -- whether we had that
5 document on file from Harleys, whether that was the
6 latest revision we had on file or whether I specifically
7 asked them for it and they sent it to me, I couldn't be
8 sure.

9 Q. Can we go back to it, please, {RYD00000421}. Just have
10 a look at the specification.

11 Did you, when you saw it, notice that the
12 specification notes didn't specify any insulation?

13 A. I don't know.

14 Q. You don't know?

15 A. I don't recall.

16 Q. Right. You don't recall.

17 I mean, sitting here now, it's clear that the
18 specification notes don't specify insulation. Have you
19 any reason or explanation as to why that is?

20 A. No.

21 Q. Do I take it that you didn't pursue that issue with
22 Harley, it would follow?

23 A. No, I don't recall not noticing it, so --

24 Q. Did Mr Brissenden not ask you about it when you sent him
25 the RS5000 datasheet and the specification notes which

135

1 doesn't refer to it?

2 A. I don't recall him asking, but he may have done,
3 I don't --

4 Q. Does it follow from that that you didn't put the two
5 documents you were sending Mr Brissenden together, the
6 specification sheet and the specification notes, and
7 notice that --

8 A. Compare the two.

9 Q. Compare the two?

10 A. Probably not, no.

11 Q. If you go next, please, to {RYD00039499}, this is
12 an email the same day, 22 April 2015, to you from
13 Mr O'Connor where he says:

14 "Si,

15 "The insulation type is as follows:

16 "Celotex RS5080.

17 "Aluminium foil facing.

18 "Class) (BS476), BS8414-2:2005.

19 "PU EN 9165 2012.

20 "Warehouse:

21 "Celotex ... Ipswich."

22 Do you know why he sent that to you?

23 A. No.

24 Q. Had you asked for it, do you think?

25 A. I don't even recall this email at all, so ...

136

1 Q. When you saw it, what did you think he meant by "Class
2 (BS476)"?

3 A. Well, like I say, I don't recall this email and quite
4 why it was asked for, but I think if I was to read it
5 again without hindsight, I think I would just be
6 focusing on the Celotex RS part of it, and the --

7 Q. Right.

8 A. -- sort of model number.

9 Q. On the face of it, it looks as if Simon O'Connor is
10 assuming that you would understand, that BS 476 and
11 BS 8414 would mean something to you?

12 A. I think he's copied and pasted that off something,
13 I would suggest.

14 Q. You --

15 A. It doesn't mean anything to me. I can't tell you what
16 that British Standard classification is.

17 Q. Right.

18 Did you know the difference between RS5000 and
19 RS5080?

20 A. I think that might have been the thickness. I think the
21 80 might have been the thickness.

22 Q. Did you know that at the time? Did you understand that?

23 A. I can't recall if I knew that at the time or have known
24 that since maybe.

25 Q. Did it occur to you to think about whether the test

137

1 denoted by those numbers, particularly BS 8414
2 identified there, had been carried out on the same
3 system that you were proposing for Grenfell Tower?

4 A. No.

5 Q. Is there any reason why not?

6 A. Well, I don't know the context in what the email was
7 sent or why. He's either forwarded it to me or I've
8 asked for it. But I would imagine we would focus, or
9 I would have focused, on the Celotex and the model
10 number.

11 Q. I want to turn to ask you some questions about
12 Kingspan's Kooltherm K15. You have heard of that
13 product, I take it?

14 A. I've heard of the product, yes.

15 Q. As contracts manager, were you aware of what materials
16 were being ordered onto the site and stored on site at
17 any given time?

18 A. Was I aware of them? I didn't go and check them,
19 I didn't go and look at them, I didn't do the quality
20 control part of the installation, so would I have walked
21 past a bundle of insulation? Possibly, I don't know.
22 But I wouldn't have noted -- I didn't know that Kingspan
23 was on there, no.

24 Q. Were you on top of what orders were coming in, even just
25 from a documentary review remote from site?

138

1 A. No, because materials predominantly are ordered by the
2 subcontractor and they control their materials,
3 you know, the amount they need, when they need them,
4 et cetera, et cetera. So we wouldn't have a system
5 where we booked in their materials and checked off how
6 much was on site and how much wasn't on site.

7 Q. So if, for example, Harley had ordered onto site
8 a quantity of, for example, Kingspan Kooltherm K15 on
9 a date, you wouldn't know whether it --

10 A. Yeah, it would be very unlikely that I knew, yeah, it
11 would be unlikely that I knew.

12 Q. Who at Rydon would have their fingers on that
13 information?

14 A. It would be one of the site team.

15 Q. One of the site team?

16 A. So either Simon O'Connor or whoever is dealing with that
17 element at that time.

18 Q. Okay. Does that tell us at that any given time you
19 personally, at least, weren't aware of what quantities
20 of what insulation were stored on site?

21 A. Yeah, correct, I couldn't tell you.

22 Q. Do you know what the usual lead time for ordering
23 insulation on this project was?

24 A. No idea.

25 Q. Right.

139

1 A. I don't know.

2 Q. Can I then go back to a different topic, which is your
3 contractual relationship with Harley.

4 We have discussed already your role in managing
5 contractual relations and we looked at paragraph 45 of
6 your statement. I just want to pursue that a bit more.

7 I think you agreed, just to set it in context, that
8 it was your responsibility to know what responsibilities
9 other parties owed to Rydon under their contracts; yes?

10 A. Yes.

11 Q. And vice versa, to ensure that Rydon and those other
12 parties complied with their contractual obligations.

13 A. Yes.

14 Q. Yes.

15 Now, can we look, then, please, at the letter of
16 intent that you sent to Harley Curtain Wall Limited at
17 {HAR00000120}. If we can turn to page 4 {HAR00000120/4}
18 of that, we can see a signature there.

19 A. Yes.

20 Q. That's your signature, I'm assuming?

21 A. Correct.

22 Q. And if we go to page 2 of this letter -- I should just,
23 before I do, show you page 1 {HAR00000120/1}. It is not
24 itself dated, but we I think can sort that out as we go
25 through your evidence. It's a letter of intent:

140

1 "Grenfell Tower ('the site')."

2 And it says:

3 "We confirm that it is our intention to appoint you

4 under our standard Sub-Contract Order as the Envelope

5 Package subcontractor in relation to the external facade

6 works 'the Works' at the above Site."

7 Then you can see "Compliance":

8 "The Authorised Works must comply with the

9 following ..."

10 And you can see (a) and (b), and then:

11 "c) Specification Page No's: As per Schedule of

12 Information Appendix F.

13 "d) Drawing No's: As per Schedule of Information

14 Appendix F."

15 There are other things in there as well which have

16 to be complied with.

17 Can I then take you to page 2 {HAR00000120/2} of

18 that, under the rubric "Contract". It says there:

19 "We confirm that it is Kensington and Chelsea Tenant

20 Management Organisation Ltd's ('the Employer') intention

21 to appoint Rydon as the Contractor to undertake the

22 Works in accordance with the JCT Standard Form ..."

23 Then (b):

24 "The Articles of Agreement and Subcontract

25 Conditions of Dom 2 will apply SAVE WHERE they are

141

1 modified by the terms of this Contract. The draft

2 Building Contract is available for inspection by you at

3 our offices. You are deemed to have notice of all its

4 provisions and its provisions are incorporated in this

5 Contract insofar as they relate to the Authorised

6 Works."

7 Are you familiar, or were you familiar at the time,

8 with the DOM2 subcontract conditions?

9 A. The general principle, yes. I couldn't state to you all

10 the different conditions in it, but yes.

11 Q. Right. Well, let's just pull them up. They're at

12 {INQ00011211}. That's page 1, and that's the 2011

13 edition, which was current at 2013/14.

14 Just looking at this first page, does this trigger

15 a recollection? Are you familiar with this?

16 A. Yeah, I mean, it's a contract that we ... you know, you

17 know in general principle and we refer to as and when we

18 need to.

19 Q. Right.

20 Given that Rydon was a design and build business

21 relying on subcontractors, was this standard form, DOM2,

22 2011 edition, a contract you commonly used as a standard

23 form when engaging subcontractors?

24 A. It probably was at the time. Obviously if we're in

25 a JCT contract as well.

142

1 Q. Yes.

2 Now, let's look at page 2 {INQ00011211/2}, please.

3 If you look at the right-hand of page 2 in the last

4 paragraph it says:

5 "These Conditions constitute a Sub-Contract only

6 where the Domestic Sub-Contract DOM/2 Articles of

7 Agreement and the associated Appendix have been

8 completed."

9 In fact, can you confirm this, the domestic

10 subcontract DOM2 articles of agreement and associated

11 appendix were never completed when subcontracting in

12 Harley, were they?

13 A. I don't recall.

14 Q. You don't recall. Is it that you don't recall one way

15 or the other or --

16 A. I don't recall one way or the other. The orders and

17 subcontracts such as this are put together by the

18 commercial department, and then obviously my signature

19 goes on the bottom of them.

20 Q. Right.

21 Well, when you did sign the bottom of the letter of

22 intent referring to the subcontract conditions of DOM2

23 applying, did you on behalf of Rydon intend that these

24 terms would apply?

25 A. Yes, I'm sure we did.

143

1 Q. Let's look at page 8 {INQ00011211/8} and

2 condition 2.4.1, top left, "Materials, goods and

3 workmanship":

4 "All materials and goods for the Sub-Contract Works

5 other than the part thereof comprised in the

6 Sub-Contractor's Designed Works shall, so far as

7 procurable, be of the kinds and standards described in

8 the Sub-Contract Documents. All materials and goods for

9 the Sub-Contractor's Designed Works shall, so far as

10 procurable, be of the kinds and standards described in

11 the Contractor's Requirements, or, if not there

12 specifically described, the Sub-Contractor's Proposals

13 or documents referred to in clause 2.6 provided that the

14 Sub-Contractor shall not substitute anything without the

15 Contractor's written consent, but no such consent shall

16 relieve the Sub-Contractor of his obligations under this

17 Sub-Contract."

18 I have read that at length. There is quite a lot of

19 legal verbiage there, but I just want to see how that

20 matches up.

21 When you go back to the letter of intent, please, at

22 {HAR00000120}, you can see that it says at page 1 that

23 the authorised works must comply with the following,

24 (c), and I read this to you earlier, "Specification

25 Page[s] ... As per Schedule of Information Appendix F".

144

1 I showed you before the provision that says that
 2 you're deemed to have notice of all the building
 3 contracts provisions.
 4 Now, the schedule of information appendix F, let's
 5 look at that. That's at {HAR00000396}. Here is
 6 appendix F. This comes from you, Mr Lawrence.
 7 Can I take it that you are familiar with this
 8 schedule and its contents?
 9 A. Yes, this is a Rydon appendix.
 10 Q. It is, and this is part of the information which you
 11 were telling Harley in your contract with Harley that
 12 needed to be --
 13 A. Yes, which is -- and this is put together by our
 14 commercial department, but yes.
 15 Q. Indeed, but you signed it.
 16 A. Yes.
 17 Q. You can see the third entry down under "Specifications",
 18 do you see it says:
 19 "Section B Specification and Design requirements."
 20 So that's incorporated; yes? Yes. You nodded.
 21 A. Sorry, yes.
 22 Q. Was it your understanding that this was a reference to
 23 the section of the building contract between the TMO and
 24 Rydon entitled "Section B Specification and Design
 25 requirements"?

145

1 A. Yes, I would expect it to be back-to-back with our
 2 contract.
 3 Q. Thank you.
 4 Let's turn to that, then. {TMO10041791/2} under
 5 "Contents", we can see part 2, if we look at that,
 6 "Section B - Specification and Design Requirements". So
 7 that's where the reference feeds through.
 8 If you look at page 179 {TMO10041791/179}, please,
 9 within section 2B, we can see here that it provides, as
 10 you can see from the top of the page:
 11 "Architectural Employer requirements are contained
 12 within ..."
 13 Then you can see:
 14 "Architectural NBS in Appendix A/Architectural.
 15 "Room Data Sheets in Appendix A/Room Data Sheets."
 16 Seeing it then in both contracts -- and I've shown
 17 you both sides of your contract, contract in and
 18 contract out -- was it your understanding that Harley
 19 was required by the letter of intent to construct the
 20 authorised works in accordance with the NBS
 21 specification?
 22 A. Yes.
 23 Q. As we have already seen, the NBS specification specifies
 24 at H92, paragraph 776, that the thermal insulation must
 25 be Celotex FR5000. We've seen that this morning.

146

1 A. Yes.
 2 Q. So would it follow, and do you accept, that if Harley
 3 were to substitute a different insulation product for
 4 FR5000, then they would need Rydon's written consent?
 5 A. Yes.
 6 Q. Within Rydon, that would be you, wouldn't it, who would
 7 have responsibility as contracts manager for providing
 8 that written consent?
 9 A. Probably -- well, yeah, probably ultimately, but it
 10 would go to -- it would probably go to the site team, it
 11 would then go and be checked by the architectural team,
 12 so we wouldn't -- had I known it was changed, and I'm
 13 not sure when it was changed, and I know there is some
 14 discussion, and I know this from the documents, that
 15 there may -- it may have changed post my leaving the
 16 project, but I wasn't aware that it had changed prior to
 17 that.
 18 Q. Well, we're just going to come to that, but thank you
 19 for --
 20 A. Sorry.
 21 Q. No, no, that is where we are going.
 22 We know that Celotex FR5000 insulation was specified
 23 on Grenfell Tower at H92/776 and we have seen that, and
 24 we also know that Celotex RS5000 was installed as
 25 insulation.

147

1 Now, did you know that on 26 May 2015 -- and the
 2 precise date doesn't matter -- 96 sheets of K15,
 3 Kingspan Kooltherm K15, were ordered by Harley from SIG,
 4 the supplier, for delivery on 4 June 2015?
 5 A. No.
 6 Q. You didn't? Did you know that --
 7 A. Unless they're somewhere else in the spec and they were
 8 for the lower floors, but no, I didn't -- I didn't know
 9 they were -- sorry, the answer to the question is: no,
 10 I didn't know they were ordered.
 11 Q. Thank you.
 12 On 10 September 2015 -- and, again, the precise date
 13 doesn't matter because you were still there for another
 14 month and a half or so before you left --
 15 A. Yes.
 16 Q. -- did you know that, at that time, 49 units of Kingspan
 17 Kooltherm K15 were ordered by Harley from CCF this time?
 18 A. No.
 19 Q. No.
 20 A. I was aware, just to fill that story out slightly more,
 21 I was -- I became aware at the end, prior to me leaving,
 22 that Harley were in the -- had financial difficulties,
 23 were in the process of changing companies. I was aware
 24 of that, and I made that aware -- as soon as I found
 25 out, I made that aware to Steve, but Steve already knew

148

1 that ahead of me, so ...

2 Q. Were you aware of any discussions either on site or

3 between people on site and the architectural team, as

4 you call them, about the substitution of RS5000 with

5 Kooltherm K15?

6 A. No, no. I didn't know K15 was involved at all until the

7 evidence has come up.

8 Q. Can you explain why that is?

9 A. Why I didn't know?

10 Q. Well, first of all, can you explain, yes, why you didn't

11 know?

12 A. Well, I wouldn't necessarily see all the materials

13 on site anyway, unless I particularly walked round and

14 were looking for them, which wouldn't necessarily be the

15 case. At that stage, come September, I think I --

16 I can't remember the precise date that I left, it was

17 October sometime, but there was an overlap between me,

18 Steve, Dave Hughes and me leaving and them coming in.

19 So, yeah, I wouldn't have -- I didn't know that

20 there was Kingspan on site.

21 Q. But your not knowing would be a lapse, wouldn't it, in

22 the contractual arrangements?

23 A. Somebody from Rydon, yes. There was an overlap --

24 Q. When I say the contractual arrangements, I mean Rydon's

25 contractual arrangements both up and down.

149

1 A. Yes. If they substitute the material, then yes, we

2 should know.

3 Q. To your knowledge, did Harley ever seek permission,

4 either in writing or otherwise, to substitute FR5000 for

5 Kingspan Kooltherm K15?

6 A. Not relating to me. I didn't know about that.

7 Q. If they had asked anybody, who would it have been, to

8 the best of your knowledge?

9 A. Well, it probably would have either been --

10 Simon O'Connor probably was -- left as well by then. It

11 probably would have come to me or at that time it would

12 have gone to Steve, Dave Hughes maybe.

13 Q. Have you any explanation as to how that product came to

14 be on this building?

15 A. I think I might have an insight now from -- since the

16 disaster and since the evidence has come up, and I think

17 it's relating to their credit limit and Harley's ceasing

18 to trade one company and starting with another, but it

19 was not something I knew at the time.

20 Q. Right, thank you.

21 Can I just ask you to look at Mr Hughes' witness

22 statement. He is going to be coming to give evidence,

23 but I will just show you a passage in his statement.

24 This is {RYD00094213}. I would like you to look at

25 page 10 {RYD00094213/10}, please, paragraph 55.

150

1 Now, I should just preface my questions by making it

2 clear to you that this is after your time at Rydon,

3 Mr Lawrence. But at page 10, paragraph 55, he says:

4 "In December 2015 or January 2016 I discussed with

5 Ben Bailey and agreed the use of Kingspan, as Harleys

6 had difficulty obtaining Celotex from their supplier.

7 As far as I was concerned Kingspan and Celotex are

8 similar products with similar insulation properties. As

9 far as Ben and I were concerned it was a like for like

10 swap of insulating material. I told Steve Blake and the

11 Clerk of Works, Jon White, of this use of Kingspan

12 insulation material."

13 Now, we know from the records, as we have been

14 through already, that K15 was used during the period you

15 were contracts manager, so an earlier period than the

16 period Mr Hughes is talking about here.

17 Did you have any views at the time about whether K15

18 was a like-for-like swap with RS5000 or FR5000 for that

19 matter?

20 A. I didn't know it was on site and I didn't have any views

21 about it, no.

22 Q. Did you know that Kingspan is a polyurethane rigid foam,

23 whereas Celotex RS5000 is a polyisocyanurate or PIR?

24 A. I wouldn't have known that technical difference, no.

25 They look very -- if you were to see them side by side,

151

1 visually they would look similar.

2 Q. I'm going to ask you now about the LABC certificate

3 relating to these products. Let's have a look at it,

4 {KIN00016733}, please. This is the LABC certificate for

5 Kingspan Kooltherm K15 rainscreen board. This was

6 issued on 30 March 2015 for this product, and we see

7 that at the bottom of page 1, "first issued on

8 28th August 2013".

9 Do you remember seeing this document at the time of

10 your involvement on the Grenfell Tower project?

11 A. No.

12 Q. No.

13 A. I've not seen it since.

14 Q. Right.

15 Now, we know this product wasn't part of the NBS

16 specification and we know that you, as contracts

17 manager, had not seen any certificate in relation to it.

18 Can you explain how an insulation product is going

19 on to this building in circumstances where it wasn't

20 specified and you didn't know about it or you hadn't

21 seen a certificate for it?

22 A. Sorry, can I explain how it was happening? Well,

23 I wasn't overseeing, as in I wasn't on -- whilst I might

24 have been on site in the office working, I wasn't

25 standing there managing the package works, that would be

152

1 one of our site managers. So I wouldn't necessarily see
 2 the product either be delivered or actually be
 3 installed .
 4 Q. Is now the first time you have ever seen this
 5 certificate ?
 6 A. I believe so, yeah.
 7 Q. I see.
 8 A. I don't recall seeing it before.
 9 Q. Because you said you hadn't seen it since. Am
 10 I assuming from that that you didn't see it at the time
 11 or since --
 12 A. No, I don't think I've seen it since either, no.
 13 Q. I see.
 14 A. No.
 15 Q. Let me just try a couple of things out on you, on the
 16 caveat that I understand you haven't seen this document
 17 before.
 18 Can I ask you to look at page 2 {KIN00016733/2},
 19 "Conditions of Certificate ". A third of the way down
 20 they start, and two-thirds of the way down we can see in
 21 bold it says:
 22 "From BBA 08/4582 tested to BS 8414 ..."
 23 Then there is a long description of the system test
 24 and its component elements.
 25 Those were different, those component elements, from

153

1 the components of the system going on to Grenfell Tower.
 2 It's self-evident that that's the case, but can you
 3 confirm that?
 4 A. Yes, yes.
 5 Q. Does it follow from your not ever having seen this, and
 6 I suppose it would have to, that you never investigated
 7 yourself whether the K15 insulation product had been
 8 tested to BR 135 in accordance with the criteria in
 9 BS 8414?
 10 A. Yeah, correct.
 11 Q. If we look at page 4 {KIN00016733/4} under "AD B", it
 12 says, just about a third of the way down the page:
 13 "Fire Safety
 14 "Thermosetting insulants (rigid polyurethane foam
 15 boards) do not meet the limited combustibility
 16 requirements of AD B2 Table A7 and so should not be
 17 accepted as meeting AD B2 paragraph 12.7. However, if
 18 they are included as part of a cladding system tested to
 19 BR135 & BS8414 for use above 18m, the complete assembly
 20 may ultimately prove to be acceptable."
 21 Do you accept that the Kingspan Kooltherm K15
 22 doesn't meet the limited combustibility requirements of
 23 ADB2?
 24 A. I have to from the document, yes.
 25 Q. Therefore, the linear route to compliance, as I think

154

1 you described it on Thursday, could not have been met by
 2 using this material?
 3 A. Agreed.
 4 Q. I think it follows from all of your answers so far on
 5 this material that you yourself never conducted any
 6 investigations to satisfy yourself that this insulation
 7 was compliant with the Building Regulations --
 8 A. No, correct.
 9 Q. -- in the context of this project.
 10 A. Yes.
 11 Q. Now, can I take you back to paragraph 51 of your witness
 12 statement, {RYD00094220/10}. You say there -- and this
 13 is back to the "obviously wrong" -- in the fifth line
 14 from the end:
 15 "Although I have no expertise or qualifications as
 16 a designer, my experience as a construction manager
 17 meant that if I saw something that was obviously wrong
 18 then I would challenge that and I would have expected
 19 the rest of the Rydon team, and indeed all of those
 20 involved in managing the project, to do the same."
 21 This is a hypothetical question, but I feel I need
 22 to ask it: had you seen the LABC certificate at the
 23 time, would that have jumped out at you as being
 24 a product which was obviously wrong for this project?
 25 A. Can I see the front page of that LABC certificate as

155

1 well, please?
 2 Q. You may. Yes.
 3 A. Sorry.
 4 Q. No, indeed. It's back at {KIN00016733}.
 5 (Pause)
 6 A. I think pretty much the same as the Celotex, they're --
 7 it's fairly misleading unless you read and fully
 8 understand all parts of that certificate. I think
 9 that's slightly misleading, that it gives the impression
 10 in the first description of products that it is for use
 11 in buildings above 18 metres. But I would expect that
 12 the -- if the product was substituted, that it would be
 13 checked by the correct design team members and
 14 Building Control.
 15 Q. Now, we have already discussed Rydon's obligation to
 16 obtain approval before substituting alternatives to
 17 specified products, and we have discussed that the
 18 specified product was FR5000, which became RS5000 in
 19 August 2014.
 20 Who did you understand you had to get approval
 21 from -- you personally -- within Rydon before ordering
 22 or allowing the installation of Kingspan Kooltherm K15
 23 onto this building?
 24 A. Before ordering?
 25 Q. Yes, before allowing it onto the building?

156

1 A. Well, (a) I would go through -- had I known, and had it
 2 have been -- yeah, I would have -- I would seek --
 3 I would have spoken to the architect, I would have
 4 spoken to -- got that all checked that it was compliant
 5 before proposing it to the client, or advising the
 6 client that that's what we were intending to use.
 7 Q. Are you aware from your recollection of any discussions
 8 at all that you had with the architects or Harley or
 9 anybody about the suitability of this product?
 10 A. No, because I didn't know it was there.
 11 Q. Now, I want to turn to a different subject, which is
 12 Lakanal House. You mentioned it briefly, as we
 13 discussed it very briefly, at the beginning of your
 14 evidence on Thursday.
 15 Can I ask you to look first, please, at
 16 {ART00003042}. This is an email from Claire Williams to
 17 Philip Booth and Nick Valente on 12 November 2014.
 18 You're not copied in on this, but I'm reading it to you
 19 by way of a background, Mr Lawrence. She says:
 20 "Chaps
 21 "Windows.
 22 "When I delivered the building contract to site
 23 yesterday I met up with Rydon and Matt Smith yesterday,
 24 and had a window discussion - I am looking to take this
 25 report to Peter Maddison and David Gibson, but am

157

1 waiting for Rydon to verify that the proposed windows
 2 will meet Building Regulations.
 3 "Cladding
 4 "I have just been looking at the cladding as our
 5 database is asking for costs (I have put something
 6 together). However, I do not know if there is any issue
 7 of flame retardance requirement? I know at
 8 Lacknall(sic) House one issue was that the replacement
 9 panelling for the asbestos cladding was not flame
 10 retardant! I don't know if this is in the
 11 specification, but want to make sure it is raised.
 12 Please advise."
 13 Now, were you, first of all, at the meeting that she
 14 refers to here?
 15 A. Regarding the windows?
 16 Q. Well, when she delivered the building contract to site
 17 she met up with Rydon. Were you one of those people?
 18 A. I don't know whether it was myself or whether it was --
 19 I don't know whether I was on site that day or whether
 20 it was Simon O'Connor.
 21 Q. You don't recall independently, sitting here, whether or
 22 not you were one of those people who met Claire Williams
 23 at that stage?
 24 A. No, because obviously it was -- you know, Claire coming
 25 to site was a regular occurrence, so no.

158

1 Q. I see, okay.
 2 Did you have an understanding that TMO was relying
 3 on Rydon to verify that the proposed windows would meet
 4 Building Regulations?
 5 A. That -- yes, that's in relation to changing the size of
 6 the windows, and I think, you know, we were in the
 7 process of checking as to whether it was a feasible
 8 change.
 9 Q. Right.
 10 Did Rydon provide the verification that Ms Williams
 11 sought, do you know?
 12 A. I believe we did, but I couldn't point you to
 13 a document.
 14 Q. Right, okay.
 15 Did you understand at the time -- never mind whether
 16 it's windows or anything else -- that the TMO was
 17 relying on Rydon to verify compliance with the
 18 Building Regulations?
 19 A. Yes.
 20 Q. She goes on to say, under the "Cladding" paragraph --
 21 and I've shown you that.
 22 Was the issue of fire performance of the cladding
 23 ever raised with you yourself personally, either by
 24 Artelia or by the TMO?
 25 A. I believe that it was raised by Claire, but it was very

159

1 specific to the element that it was raised against.
 2 Q. Yes. Well, let's look at that. {RYD00023468}. This is
 3 an email from Claire Williams to you the same day,
 4 12 November 2014, copied to Philip Booth at Artelia,
 5 "Grenfell cladding":
 6 "Simon
 7 "I am just writing to get clarification on the fire
 8 retardance of the new cladding - I just had a 'Lacknall'
 9 moment."
 10 Then she sets out what looks like a cut and paste or
 11 an extract from the NBS specification where it refers to
 12 compliance standard, the Centre for Window and Cladding
 13 Technology, "Standard for systemised building
 14 envelopes", et cetera. There is the rest of it there.
 15 When you received that email, what did you
 16 understand Claire Williams to mean by a "'Lacknall'
 17 moment"?
 18 A. Well I knew that -- I think we referenced this the other
 19 day. I knew that -- I had heard that there was a fire
 20 at Lakanal some years before, but I didn't know the
 21 specific details. So I knew it was relating to fire.
 22 Q. You knew it was relating to fire. Did you also know
 23 that it was relating to fire in the context of the fire
 24 retardance of the new cladding?
 25 A. No.

160

1 Q. She says that, though:
 2 "I am ... writing to get clarification on the fire
 3 retardance of the new cladding - I just had a 'Lacknall'
 4 moment."
 5 So putting the question slightly differently --
 6 A. Sorry, yes.
 7 Q. -- what connection did you make, if any, between the
 8 fire retardance of the cladding and Lakanal House?
 9 A. Only the fact that Lakanal House had had a fire, no more
 10 connection than that.
 11 Q. Right.
 12 A. But this email to me is relating specifically to the GRC
 13 cladding at the bottom section of the tower.
 14 Q. She --
 15 A. And not cladding overall, because there had also been
 16 a conversation -- there had been conversations around
 17 Claire and the TMO's concern about the robustness of the
 18 cladding on the lower floors of the building, and the
 19 concern from external fire, ie bins and -- et cetera,
 20 et cetera. So --
 21 Q. How do you -- sorry.
 22 A. Sorry, carry on.
 23 Q. No, had you finished your answer?
 24 A. Yes.
 25 Q. How do you get from the email that her concern arising

161

1 from her Lakanal moment related only to the fire
 2 retardance of the cladding on the lower parts of the
 3 building?
 4 A. Because it says GRC products. The bit where it's copied
 5 and paste, it says:
 6 "Comply with the recommendations of GRCA
 7 publications ..."
 8 And then it references the GRC products. The GRC
 9 products were only used on the bottom, I don't know,
 10 3 metres, 6 metres of the building, around the columns
 11 at the bottom, and there was also another
 12 conversation -- and I can't tell you the timescale, but
 13 there was another conversation involving Claire and
 14 others around the robustness of the lower sections of
 15 cladding external treatment around the entrance of
 16 Grenfell. And the concern -- she had expressed concern,
 17 and I think this might only be verbally, I'm not sure if
 18 there is any email trail on this, about -- because they
 19 stored bins and -- et cetera round the lower floors, and
 20 they were concerned about, if anything happened there,
 21 whether that would cause an issue from the lower four
 22 floors.
 23 Q. Right.
 24 I don't think there is any reference in your witness
 25 statement to the context of this email being

162

1 a discussion about cladding on the lower four floors
 2 only.
 3 A. I don't know if it mentions it in the --
 4 Q. All right.
 5 A. Sorry. It specifically says in there, and having
 6 reviewed this since, it specifically says GRC products.
 7 Q. Yes, it also says:
 8 "Compliance standard: The Centre for Window and
 9 Cladding Technology (CWCT) 'Standard for systemised
 10 building envelopes'"
 11 What did you get out of that reference in the
 12 context of her Lakanal moment?
 13 A. I got out that it was relating to the GRC products and,
 14 like I say, I believe that -- well, not I believe;
 15 I know that there was a conversation at the time,
 16 because we were looking -- there was a design
 17 conversation going on in the background about whether
 18 GRC products could be substituted for Reynobond or
 19 AN Other, and there was a long conversation about
 20 whether stainless steel was acceptable, whether
 21 Reynobond was acceptable, whether they had to stick with
 22 GRC products.
 23 Q. Right.
 24 A. So I read that as GRC products only. Maybe wrongly, but
 25 that's how I read it and read it now.

163

1 Q. We have no record of any response by you to her question
 2 or request for clarification, if I can put it that way.
 3 Is that right? Did you respond?
 4 A. We can't find any record of it, so I --
 5 Q. No. On the basis that there isn't any record of
 6 a response by you, why is there no record of any
 7 response by you to her Lakanal moment question?
 8 A. I don't know. I would have ... I would have assumed
 9 that I would have taken that email, because I wouldn't
 10 have answered it directly, and I would have passed that
 11 to probably Harleys. So whether there is other emails
 12 around the date or not connected, I don't know.
 13 Normally I would have expected to just take that email
 14 and I would forward that straight to Harleys and I would
 15 keep Claire copied in, so if there was any backwards and
 16 forwards correspondence, then it would be ...
 17 Q. Presumably you have had quite a long time before today
 18 to think about this email.
 19 A. Yes, I've seen it previously.
 20 Q. Yes. And you have had quite a long time to examine the
 21 documents in the Inquiry to see whether there are
 22 in fact any records of you responding to her or you
 23 sending it on to Harley.
 24 A. Correct.
 25 Q. Casting your mind back, do you remember looking at the

164

1 compliance standard, CWCT "Standard for systemised
2 building envelopes", at least to give her an initial
3 answer to her request for clarification ?
4 A. No, I would have taken that email, because it's not one
5 that I would -- I could answer from a technical point of
6 view, I would take that email and I would pass that on
7 to -- I think I would have passed that on to Harleys.
8 Q. You think sitting here now you would have done?
9 A. Yes, if that had come to me now, then I would take that
10 and I would pass that straight to Harleys, and I would
11 keep Claire and Philip copied in, Claire particularly
12 copied in, so they could respond accordingly to her.
13 Because I couldn't provide a response to that.
14 Q. I understand that. So you say you would have sent it to
15 Harley. We find no record of you passing it on to
16 Harley to say, "Please help me advise my client". Can
17 you explain that?
18 A. No.
19 Q. Right.
20 You had seen the BBA certificate back in April when
21 Mark Harris sent it to you, 23 April 2014, Mr Lawrence.
22 Can you explain why you didn't at least tell her that
23 Reynobond FR panels, fire resistant panels, were also
24 available?
25 A. I think I've answered this previously. I didn't know

165

1 they were available.
2 Q. No, all right.
3 Now, if we look at Mr Cash's witness statement, he
4 is from Artelia. I just want to look at one thing in
5 it. {ART00006544/58}, please. At paragraph 186, he
6 says -- and it's quite a long paragraph but this is the
7 background to it. Four lines down, he says:
8 "On the question on cladding, Philip [Booth] said he
9 had had a quick review of the specification in the
10 tender documents for cladding and quoted various
11 compliance standards for cladding, saying that he
12 anticipated that one of these standards would require
13 flame retardance. He said that, as the client, Claire
14 Williams should seek clarification on her question from
15 Rydon. This was the right approach; it was for Rydon,
16 as the contractor, to address Claire Williams's
17 questions."
18 First of all, do you agree that it was Rydon's role
19 to address Claire Williams' questions?
20 A. The email was directed at us, so yes.
21 Q. And your job within Rydon to address those questions on
22 Rydon's behalf?
23 A. Correct.
24 Q. There is no reference in Mr Cash's statement to the
25 request for clarification being limited only to the

166

1 lower four floors. We can see that.
2 Are you quite sure that this discussion, this
3 request for clarification, really was limited to the
4 lower four floors?
5 A. The email directs me to GRC cladding, and GRC cladding
6 was only on the lower -- it probably wasn't even the
7 lower four floors, it was probably the lower floor
8 around the columns.
9 Q. We may need to revisit that.
10 A. I'd have to look at the drawings to find how many floors
11 the GRC cladding covered, but it was -- it was
12 definitely the lower 3 metres, 4 metres, 5 metres.
13 Q. Right. You are definite about that, are you?
14 A. Without looking at the drawings, I can't tell you how
15 many metres, but I definitely know that the
16 specification was relating to the --
17 Q. Right.
18 A. -- bottom section of the cladding, yes. Bottom section
19 of the envelope, yeah.
20 Q. Can I ask you, then, to look at NBS specification at
21 H92, which is at {SEA00000169/69}. I just want to pick
22 up and follow that answer through.
23 This is where we see the CWCT standard for
24 systemised building envelopes, and this is in the
25 context of H92 rainscreen cladding. Under 342:

167

1 "Contractor's design of rainscreen generally."
2 We can see there the design standard to CWCT
3 'Standard for systemised building envelopes'.
4 There is nothing in there about the lower four
5 floors only.
6 A. So can we pull up the part of the specification that
7 relates to GRC cladding, please?
8 Q. We can, perhaps after a break when I have put my fingers
9 on it, so perhaps we can leave that there.
10 Let me go back into the line of the evidence I did
11 want to show you. It's {TMO00000887/18}, please, which
12 is the witness statement of David Gibson of the TMO.
13 I would like to look at paragraph 95. He says there:
14 "I recall however at one of our monthly Design
15 Development Meetings, Simon Lawrence of Rydon indicating
16 that there was disparity between the delivery times for
17 insulation and rainscreen and to avoid delaying the
18 project he indicated their intention to install the
19 insulation first and fit the rainscreen later."
20 Then at paragraph 96 he goes on:
21 "This was the first I was aware that the two items
22 were separate and it raised some concerns in my mind
23 having then recently read recommendations following the
24 Lakanal House Fire Inquest where I understood that a gap
25 between the insulation and the rainscreen had created

168

1 a chimney flue effect which contributed to fire spread.”
 2 Do you see that? Then he goes on in the next
 3 paragraph:
 4 “I had understood that the sample cladding to have
 5 rainscreen flush with the insulation and it came as
 6 a surprise to me to learn that they were fitted
 7 separately.”
 8 If you go over to paragraph 98 at the bottom of the
 9 page:
 10 “I raised this with Simon Lawrence as a matter of
 11 serious concern and asked him if he could give some
 12 assurance that we would not have a Lakanal-type problem
 13 with the separation of rainscreen and insulation.”
 14 Do you recall Mr Gibson raising this matter with you
 15 at a meeting?
 16 A. Not at all, no.
 17 Q. Right.
 18 A. Rainscreen by the nature of rainscreen, there is a gap
 19 between rainscreen and the insulation. So, no, I don’t
 20 recall this at all.
 21 Q. Right.
 22 Over the top of page 19 {TMO00000887/19} at 99,
 23 Mr Gibson says:
 24 “The meeting was chaired by Philip Booth of Artelia
 25 and Simon Lawrence assured us that this would create no

169

1 problem because the materials used were completely inert
 2 and would not burn at all. The meeting accepted his
 3 assurances in this regard and nothing came to my notice
 4 subsequently prior to the fire to question that these
 5 assurances were not accurate.”
 6 Did you give such an assurance to Mr Gibson?
 7 A. No. I don’t agree with that statement at all.
 8 Q. Do you recall seeing the minutes which match this
 9 description?
 10 A. No.
 11 Q. Because he refers to those in paragraph 100. He says:
 12 “The minutes of this meeting were produced by
 13 Artelia and they definitely existed because I recall
 14 reading them. I recall that ‘Lakanal’ had been spelled
 15 incorrectly in the minutes. I understand these minutes
 16 cannot be located in TMO files.”
 17 I think you’re saying you’re clear in your mind you
 18 have never seen such minutes?
 19 A. No.
 20 Q. Right.
 21 At paragraph 101 Mr Gibson says:
 22 “I have a clear recollection of the discussion and
 23 of the minute recording it.”
 24 And he explains why. Then he goes on to say in the
 25 middle of that paragraph:

170

1 “Until the occurrence of the fire at Grenfell Tower
 2 I had always believed the cladding installed was inert
 3 as had been assured by Simon Lawrence and I had no
 4 reason to consider otherwise. I cannot recall the date
 5 of the meeting but I have given some details in my
 6 statement as to when it was. I think it may have been
 7 about March-April 2015 or possibly earlier.”
 8 Now, that’s his witness statement. Can you comment
 9 on that?
 10 A. I don’t agree with it at all.
 11 Q. Right. So you say Mr Gibson is wrong?
 12 A. Yes.
 13 Q. Right.
 14 Now, leaving aside Mr Gibson’s recollection, did you
 15 ever yourself personally assure him that the cladding at
 16 Grenfell was, to use his word, inert?
 17 A. No. I wouldn’t give technical assurances unless I had
 18 that information from the designers or specialists.
 19 Q. No.
 20 What questions did you ever ask Studio E -- let me
 21 put it a slightly different way.
 22 Do you have a recollection of ever asking the
 23 question of Studio E about the inertness or ertness of
 24 these products?
 25 A. No.

171

1 Q. What about Exova?
 2 A. No.
 3 MR MILLETT: Mr Chairman, I’m going to turn to the question
 4 of cavity barriers next, which may be a convenient
 5 moment for a break. There is a reference I just want to
 6 check, which I am unable to do stranded here, as it
 7 were, standing here.
 8 SIR MARTIN MOORE-BICK: I will give you an extra couple of
 9 minutes to do that.
 10 We will have a break now, Mr Lawrence. We will come
 11 back at 3.20. You go with the usher. No talking about
 12 your evidence.
 13 THE WITNESS: Thank you.
 14 SIR MARTIN MOORE-BICK: All right, thank you very much.
 15 (Pause)
 16 Right, 3.20, please.
 17 MR MILLETT: Thank you.
 18 SIR MARTIN MOORE-BICK: Thank you.
 19 (3.05 pm)
 20 (A short break)
 21 (3.20 pm)
 22 SIR MARTIN MOORE-BICK: All right, ready to go on,
 23 Mr Lawrence.
 24 THE WITNESS: Yes.
 25 SIR MARTIN MOORE-BICK: Thank you.

172

1 MR MILLETT: Mr Lawrence, I'm going to go back to the
2 Lakanal moment email, if I may, and I want to look at
3 that side-by-side with the NBS specification, which was
4 an exercise I was vaguely attempting to do on my feet
5 before the break, and I'm glad I didn't.

6 If you go to {RYD00023468}, this is the email, and
7 I wonder if we can have that on the left-hand side of
8 the screen so we can see it, and on the right-hand side
9 can we please have {SEA00000169/55}. What I want to do,
10 Mr Lawrence, is just to explore with you really where we
11 see these references in Claire Williams' email in the
12 NBS specification, do you see? It's a slightly involved
13 comparison exercise.

14 Page 55 is what we see on the right-hand side, which
15 is part of the NBS spec, H40, entitled "Glass fibre
16 reinforced concrete cladding/components".

17 Just working our way through to the next page of
18 that {SEA00000169/56}:

19 "H40 Glass fibre reinforced concrete
20 cladding/components."

21 At 130 we can see "Types of cladding/components":

22 "Proprietary GRC components column cladding."

23 Then you can see the GRC components are set out
24 there.

25 GRC stands for glass reinforced concrete.

173

1 A. Correct.

2 Q. Right.

3 If you go over the page, please, to page 57
4 {SEA00000169/57} and look at "General
5 requirements/preparatory work", paragraph 205,
6 "Contractor's design of cladding to columns", in the
7 last bullet point there you see:

8 "Additional requirements: Comply with the
9 recommendations of GRCA publications 'Specification for
10 the manufacture, curing and testing of GRC products' and
11 'Guide to fixings for glass fibre reinforced concrete
12 cladding'."

13 Just looking at that, and then casting your eye to
14 the left of the screen, you can see that the words in
15 Claire Williams' email, "Comply with the recommendations
16 of GRCA publications 'Specifications for the
17 manufacture, curing and testing of GRC products' and
18 'Guide to fixings for glass fibre reinforced concrete
19 cladding'", come straight out of this part of the NBS
20 specification.

21 A. Correct.

22 Q. Now you have put the two side by side, you can see where
23 her reference to the GRCA publications comes from.

24 We have looked through H40 and cannot find any
25 reference in that section of the NBS specification to

174

1 the "Compliance standard: The Centre for Window and
2 Cladding Technology (CWCT) 'Standard for systemised
3 building envelopes'". That comes from H92 on page 69
4 {SEA00000169/69}. Just pick this up there, page 69,
5 please. This is H92, rainscreen cladding. We looked at
6 this earlier in your evidence. At 310:

7 "CWCT 'Standard for systemised building envelopes'."

8 Do you see that there? Then part 6, "Fire
9 performance". So that was the compliance standard
10 there.

11 If you look on to the next page {SEA00000169/70} --
12 you don't see it there, but you do also see this
13 reference elsewhere in H92. My point is it's not in the
14 H40 section on glass fibre.

15 Therefore, will you accept that, given that it's in
16 H92, the reference in Claire Williams' email to the
17 compliance standard CWCT, which isn't in H40 where you
18 find the GRCA publications, is to be taken as
19 a reference to the whole of the building envelope and
20 not just the part of the building envelope around the
21 lower four floors?

22 A. Well, I don't accept it because I don't think it's
23 clear, but I read it as the GRC.

24 SIR MARTIN MOORE-BICK: Mr Lawrence, it looks as though what
25 Ms Williams has done is to take some language from the

175

1 general cladding section and some language from the
2 lower section and splice them together, but without
3 perhaps explaining why she has put them together in that
4 way.

5 MR MILLETT: Yes, and if you look at -- to be fair to you,
6 there are references to CWCT standards in other parts of
7 the NBS spec which don't deal with the upper floors,
8 for example curtain walling, and I just wanted, to be
9 fair to you, to show you page 47 {SEA00000169/47} which
10 is H11, if we can have that up, please. That's curtain
11 walling, and you can see there under 325, "Deflection
12 under wind load" -- in fact, actually, it's at the top
13 of the page as well. If you go to the top of the page,
14 "Design/performance requirements":

15 "305 CWCT 'Standard for systemised building
16 envelopes'."

17 And you have them all set out again. So that
18 obviously does apply to the curtain walling, which is
19 the lower part of the building.

20 Then the bottom of the same page, please,
21 "Deflection under wind load", and you see the reference
22 again there, CWCT standards.

23 Just to be clear for you, the CWCT appears not in
24 the part dealing with the glass reinforced concrete,
25 does appear in H92 dealing with the whole of the

176

1 envelope, but also does appear in that part dealing with
2 curtain walling, so it appears in various different
3 parts.

4 Having shown you all of that, my question is really:
5 is what Claire Williams was sending you, what
6 the Chairman has really essentially put to you, which is
7 that these standards have been selected from different
8 parts of the NBS and put together in an email so that
9 they're not only related to the lower four floors but
10 the whole of the building?

11 A. Well, that's not how I understood it.

12 Q. Right.

13 A. I think Claire's probably best placed to explain what
14 she was meaning by the email, but that's not how I took
15 it. I would focus -- I did focus on the GRC part of it.

16 Q. All right. I just wonder why you focused only on the
17 GRCA part of it when the reference to compliance
18 standard CWCT is found elsewhere in the NBS spec,
19 including H92, rainscreen cladding.

20 A. (a) I don't think at the time I would have picked up the
21 NBS spec, and would have known that glass reinforced
22 concrete was also I believe known as cladding, and it
23 is -- it says in there guide to concrete cladding, so
24 I think I probably could have reasonably gathered that
25 the fact of the CWCT and its referencing cladding in

177

1 there, that it wouldn't necessarily be specific about
2 rainscreen and/or curtain walling and wouldn't also
3 apply to the GRC.

4 I would've focused -- GRC is the bit that stands out
5 to me on that email.

6 Q. Let me just see if I can keep going on this for a moment
7 longer. Can you go to page 68 {SEA00000169/68}. We
8 looked at this I think on Thursday in your evidence.
9 This is 220, "Specification", and here it says:

10 "Compliance standards: The Centre for Window and
11 Cladding Technology (CWCT) 'Standard for systemised
12 building envelopes'"

13 That is an exact cut and paste into Claire Williams'
14 email, and this is about H92, rainscreen cladding.

15 So I'm putting it to you that, actually, what she
16 was after was fire retardance of the new cladding up and
17 down the building, lower floors and all floors, upper
18 floors too.

19 A. Well, I agree now, showing me that this is copy and
20 paste from the specification, yes, I do agree with that.
21 I don't agree that the email is clear. Regardless
22 whether the email is -- no, not regardless. I picked
23 out the GRC part of it. That's the bit that stands out
24 to me as being specific.

25 Q. I wonder why you did pick that out at the time as you

178

1 now say --

2 A. Because nothing else highlights the specific. Otherwise
3 we could be talking about windows as well, couldn't we?
4 There is a specific reference to a product there, which
5 is the GRC, and there had been discussions around the
6 robustness of the lower sections of the building.

7 Q. You say that. I'm just asking you why you didn't pick
8 out the first item on the list, compliance standard
9 CWCT, which appears --

10 A. Because the GRC bit stands out to me more, and the fact
11 that it also is glass fibre reinforced concrete
12 cladding.

13 Q. Now --

14 A. Without me pulling those -- sorry. Without me pulling
15 those -- finding those exact lines in an NBS
16 specification, I don't think it's clear, and quite
17 frankly I wouldn't have answered that myself anyway.
18 I wouldn't have been able to answer that myself anyway.
19 I would have passed that to the design team for them to
20 confirm the fire retardance of --

21 Q. Yes. You see, Mr Lawrence, my problem standing here
22 when asking you about this recollection which doesn't
23 appear in any documents is really to go on what I have
24 got in front of me on the screen.

25 But you say -- going to the question, then, she

179

1 wants clarification on the fire retardance of the new
2 cladding. She is not limiting her request to the lower
3 four floors of the building, is she?

4 A. No, but I think ... we're, rightly so, pulling apart
5 an email word by word and trying to understand and
6 assume what is meant by that. When I received that
7 email, I, rightly or wrongly, focused on the GRC part of
8 that email, and there was also discussions going on in
9 the background regarding the robustness of the lower
10 floors. So that's how I interpret it. Whether we pull
11 it apart word by word -- I'm not saying you're wrong,
12 Mr Millett, but I'm just telling you how I read that
13 email -- rightly or wrongly, how I read that email.

14 Q. In the context of the question which refers to the
15 Lakanal moment, what was it about Lakanal that was
16 limited only to the lower four floors?

17 A. I don't know enough about Lakanal. Lakanal suggests to
18 me just fire. It's just her -- another way of
19 emphasising fire.

20 Q. Yes.

21 A. I don't know enough about Lakanal House to be able to
22 comment on what happened and whether it was the lower
23 floors, top floors or anything. I don't know enough
24 about it.

25 Q. Mr Lawrence, forgive me for this question, and I'll move

180

1 on from it but I do feel I need to ask it, but sitting
 2 here now, are you sure that the answers you have been
 3 giving me based on this email are not an ex post facto,
 4 after the event, rationalisation on your part?
 5 A. No.
 6 Q. If I then turn to cavity barriers. I'd like to go back,
 7 if I may, please, to the BBA certificate for Reynobond
 8 PE 55 which we looked at earlier. That's {SEA00000516}.
 9 You have already told us, I think, that you didn't read
 10 this document, at least beyond the first page, so
 11 forgive me for the next question.
 12 Can you go to page 5 {SEA00000516/5}, please, and
 13 look at paragraph 6.6:
 14 "Cavity barriers should be incorporated behind the
 15 cladding, as required by the national Building
 16 Regulations, but should not block essential ventilation
 17 pathways. Particular attention should be paid to
 18 preventing the spread of fire from within a building
 19 breaching the cladding system through window and door
 20 openings."
 21 Now, you have already told us your understanding of
 22 cavity barriers when we were looking at the BCA guidance
 23 document. It seems like a very long time ago now. But
 24 can we look at Approved Document B, {CGL00000224/82}.
 25 Here is diagram 33, underneath paragraph 9.1.

181

1 Now, you told us earlier on that you weren't
 2 familiar with diagram 33. Just confirm that, is that
 3 right?
 4 A. Correct, I've read it post.
 5 Q. Yes. Let's just look at 9.1 and see if you're familiar
 6 at least with the principles in it:
 7 "Concealed spaces or cavities in the construction of
 8 a building provide a ready route for smoke and flame
 9 spread. This is particularly so in the case of voids
 10 in, above and below the construction of a building, e.g.
 11 walls, floors, ceilings and roofs. As any spread is
 12 concealed, it presents a greater danger than would a
 13 more obvious weakness in the fabric of the building."
 14 Can I take it from earlier answers in your evidence
 15 that you weren't familiar at the time with the precise
 16 words of this text?
 17 A. Correct.
 18 Q. Were you familiar with the principles, at least, as
 19 expressed in it?
 20 A. The principles of compartmentation, yes.
 21 Q. Yes.
 22 Were you aware at the time of your involvement in
 23 this project that cavity barriers play an important role
 24 in preventing the spread of fire and smoke throughout or
 25 across a building?

182

1 A. Yes.
 2 Q. Can I ask you to look at paragraph 9.3 over the page
 3 {CLG00000224/83}, "Junctions and cavity closures":
 4 "Cavity barriers should be provided to close the
 5 edges of cavities, including around openings.
 6 "Cavity barriers should also be provided:
 7 "a. at the junction between an external cavity wall
 8 (except where the cavity wall complies with Diagram 34)
 9 and every compartment floor and compartment wall ..."
 10 At the time of your involvement in this project, if
 11 not familiar with the precise text, were you familiar
 12 with this principle?
 13 A. I was familiar with -- when it comes to rainscreen
 14 cladding, that previously that we would put cavity
 15 barriers in line with the compartment walls and floors
 16 of each individual property.
 17 Q. Were you aware at the time of your involvement that
 18 an example of an opening would be a window?
 19 A. I wasn't aware at the time, no.
 20 Q. Right.
 21 Given that you accept, I think, Rydon was
 22 responsible for ensuring that the as-built design for
 23 Grenfell Tower had to meet statutory requirements --
 24 I think you accept that?
 25 A. Yes.

183

1 Q. And I think as you also accept your personal role was to
 2 co-ordinate and manage the process of design, though not
 3 the design itself.
 4 A. Yes.
 5 Q. And also to make sure the designs comply with client
 6 requirements; yes?
 7 A. Yes.
 8 Q. Given those things, my question is: what system or
 9 strategy did you yourself use on this project to make
 10 sure that cavity barriers were included as required on
 11 this building?
 12 A. I used a specialist subcontractor, used a lead designer,
 13 and we used consultation with Building Control.
 14 Q. Let's look, then, in the light of that, at a document,
 15 {HAR00017738}. This is an email from Kevin Lamb of
 16 3 March 2015 to you, copied to Neil Crawford at Studio E
 17 and Bruce Soune and others at Harley:
 18 "Simon,
 19 "Please find attached drawings now showing the fire
 20 breaks, both horizontal and vertical.
 21 "We assume a requirement of 90min integrity & 30min
 22 insulation is sufficient, if not please advise."
 23 Were you surprised to be asked this question by your
 24 specialist cladding subcontractor?
 25 A. I think they were just seeking clarification, so

184

1 I wasn't particularly surprised, but as with the other
 2 requests for information, it would obviously be directed
 3 to me, or has been directed to me, but would be --
 4 I would be expecting Studio E to be commenting on that.
 5 Q. Right.
 6 In the light of our discussions yesterday, where you
 7 were copied in on discussions between Harley and
 8 Studio E but didn't expect to have any input into them,
 9 is that the reason why you didn't ask Mr Lamb why he was
 10 asking you and not Studio E?
 11 A. Correct.
 12 Q. Yes.
 13 Did it occur to you at this point, when you saw that
 14 Mr Lamb himself, who was providing Harley with services,
 15 needed direction here, that you needed to employ some
 16 external specialist fire advice?
 17 A. No, I think he's stating what he believes is correct and
 18 he's asking for further verification of that.
 19 Q. Right.
 20 A. So ...
 21 Q. Did it not occur to you to wonder why he needed advice?
 22 A. No, I think it's -- I don't think it's unusual for
 23 a specialist or any other designer to want other
 24 parties, whether that be Building Control, whether that
 25 be Studio E, whoever, to double-check their design, that

185

1 their assumptions are correct, and I think in particular
 2 with Building Control or the Building Regulations, from
 3 my understanding, is that they can be interpreted
 4 sometimes in different ways.
 5 Q. Well, you see, here is your specialist subcontractor on
 6 whom you say Rydon was completely reliant --
 7 A. Yes.
 8 Q. -- batting back to you, or at least Studio E and you,
 9 a request for advice about whether their assumption
 10 about a 90-minute integrity and 30-minute insulation was
 11 sufficient. Did that not cause you some alarm?
 12 A. No, I saw that as a normal design process and
 13 discussions.
 14 Q. Did you look at the drawings which Mr Lamb attached to
 15 his email?
 16 A. I don't know if I did at the time.
 17 Q. If you hadn't done it, how would you be able to do your
 18 job of, as you say in your statement, checking that the
 19 designs complied with client requirements?
 20 A. I would expect to rely on Studio E to be checking the
 21 design from a technical perspective and be advising me.
 22 Q. Let's see if we can trigger a recollection.
 23 Can I ask you to look at one of the drawings you
 24 were sent, {HAR00003952}, please. If you look at the
 25 top of this drawing, in the middle, we can see just

186

1 within the shaded area it says "Firebreak" and there is
 2 a long set of horizontal dashed lines across the page.
 3 Do you see that?
 4 A. Yeah.
 5 Q. It says "Firebreak"; what did you understand that to
 6 represent?
 7 A. A cavity barrier.
 8 Q. A cavity barrier, okay.
 9 Look at the top right-hand of the drawing. Again,
 10 there is a reference to firebreak. What did you
 11 understand that to be?
 12 A. The same.
 13 Q. Right.
 14 A. I think they're -- correct or incorrect, I think
 15 they're, you know, words that often get exchanged in
 16 construction.
 17 Q. Looking at these drawings, do these drawings trigger
 18 a recollection in your mind that you saw them at the
 19 time, do you think?
 20 A. I've seen these drawings, so ...
 21 Q. Right. Okay.
 22 Bottom left-hand corner of the drawing there is
 23 another reference to firebreak. Again, is that a cavity
 24 barrier?
 25 A. Yes, I would assume so, yeah.

187

1 Q. So when we see the word on this drawing "firebreak", was
 2 it your understanding, either specifically on this
 3 drawing or generally, that firebreak meant cavity
 4 barrier?
 5 A. Yes, those are the terms that had been used -- that
 6 I had seen used previously in previous projects, so yes.
 7 Q. I see. So you think the word "firebreak" is an industry
 8 term, is it?
 9 A. I think it's an interchangeable term with "cavity
 10 barrier".
 11 Q. You see, the word "firebreak" is not a word that's used
 12 in Approved Document B. Did you know that?
 13 A. No.
 14 Q. Right. In fact, it's not a technical expression for
 15 a cavity barrier at all. Did you know that?
 16 A. Not a recognised expression, no. No, I didn't know
 17 that. That's -- I think that's a word that's commonly
 18 used in construction.
 19 Q. Right.
 20 For clarity, would you accept that the words "cavity
 21 barrier" should have been used as opposed to
 22 "firebreak"?
 23 A. Yes, if that's -- yeah.
 24 Q. Right.
 25 Now, do you agree that there are, on this drawing,

188

1 no cavity barriers at all shown round the window jamb or
 2 the window cill openings?
 3 A. There don't appear to be, correct.
 4 Q. We can see the floor line marked with "FFL". You can
 5 see that?
 6 A. Yeah.
 7 Q. We can see that the horizontal cavity barriers appear
 8 above this line .
 9 Given what I've just shown you in Approved
 10 Document B, paragraph 9.3, do you agree that the
 11 horizontal cavity barriers should have appeared in line
 12 with the floor?
 13 A. Sorry, why are they not in line with the floor?
 14 Q. Well, they don't appear to be in line with the floor .
 15 A. The floor will be ... well, I don't know what the floor
 16 is, 150-mil, 200-mil, 300-mil thick?
 17 Q. Right.
 18 A. And the line is only a line, so I can't -- I don't think
 19 you can determine from that that it's definitely not in
 20 line with the floor .
 21 Q. Right. Okay. All right.
 22 Now, do you accept that the word "firebreak" there
 23 could be confusing? Specifically, it could be confused
 24 with something called a firestop .
 25 A. I'm sure it could be.

189

1 Q. Right.
 2 Have you come across the word "firebreak" in the
 3 industry as interchangeable as between "cavity barrier"
 4 and "firestop"?
 5 A. I have done, and -- well, and previously at this -- my
 6 experience previously was with Harleys and their
 7 terminology, so up to that date that might have been
 8 a learned experience from Chalcots and Ferrier, which
 9 both involved Harleys, so ...
 10 Q. Now, looking at {EXO00001315} we can see the discussion
 11 about firebreaks developing through March 2015, and
 12 you're involved in this. Really what I want to do is
 13 just explore with you over the next few questions how
 14 deeply involved you were.
 15 This is an email from Neil Crawford passing the
 16 issue about 90 minutes' integrity and 30 minutes'
 17 insulation on to Terry Ashton at Exova.
 18 You are not copied in on this email, but he sends
 19 him a selection of attachments:
 20 "Hi Terry
 21 "Just a quick question relating to Grenfell Tower."
 22 Then he passes on the query; do you see that?
 23 A. Yes.
 24 Q. He specifically asks in the second line:
 25 "Can you comment on the level of protection (90+30)

190

1 as to whether this is suitable ."
 2 Had you asked Mr Crawford to seek Mr Ashton's
 3 advice, do you remember?
 4 A. I don't believe so.
 5 Q. So, so far as you're concerned sitting here, you think
 6 that he did it off his own bat?
 7 A. Yes.
 8 Q. Moving forward, we can see Mr Crawford's response to
 9 Kevin Lamb, {EXO00001461}. This time Neil Crawford
 10 copies you in to the email he sends him, and also
 11 Bruce Sounes and others at Harley:
 12 "Hi Kevin
 13 "As per [our] telephone conversation I have asked
 14 the question of Exova on the fire break but not had
 15 anything back. To me the fire breaks would have to
 16 follow the ratings of the party walls which are shown on
 17 the fire plan attached. You can see some of the low
 18 level apartments are separated by 120mins and others by
 19 60mins."
 20 Now, we can see that from this email you had
 21 discovered that Mr Crawford had asked Exova for advice.
 22 Did it surprise you that he had gone out to Exova
 23 for advice on something like this?
 24 A. I think at the time, yes.
 25 Q. It did. Did you --

191

1 A. I -- without knowing the other conversation with Exova
 2 brought in, I don't know the timeline on that.
 3 Q. Given that you say that it did surprise you at the time
 4 that Mr Crawford had gone out to Exova on something like
 5 this, did you seek to have a conversation with
 6 Neil Crawford or indeed Bruce Sounes about why they felt
 7 they needed this external advice?
 8 A. I don't believe a specific conversation about that, no.
 9 Q. Is there a reason why you didn't pick it up with him and
 10 say, "Hang on, why do you need to go to Exova for
 11 something like this"?
 12 A. No, I don't know. I mean, ultimately it would --
 13 Building Control would be who we would be relying on.
 14 Q. Do you know whether Mr Ashton ever actually replied to
 15 this query?
 16 A. I don't know.
 17 Q. Right.
 18 He says, as I've read this to you:
 19 "To me the fire breaks would have to follow the
 20 ratings of the party walls ..."
 21 Were you happy to rely on the opinion of Mr Crawford
 22 in circumstances where he had felt it necessary to go
 23 out to Terry Ashton to ask him the answer?
 24 A. Well, I knew that ultimately Building Control would be
 25 consulted about it, so I knew there would be a check

192

1 from Building Control about the compliance.
 2 Q. Right. But this is at this stage. My question at this
 3 stage is: given that you were surprised, as you've told
 4 us, that Mr Crawford had felt it necessary to seek
 5 external, specialist fire safety advice from Mr Ashton,
 6 were you happy to rely on his opinion in circumstances
 7 where he had felt it necessary to seek external advice
 8 and hadn't got it yet?
 9 A. Well, the design wasn't finished and signed off, so this
 10 again is part of a chain of a process of design
 11 development as it goes through.
 12 Q. Yes.
 13 A. And I may not have even seen this email at the time it
 14 was sent. There may have been -- I'm sure there were
 15 others attached to this email that I may have picked up
 16 later on. I would not necessarily have seen it
 17 minute-by-minute as it came in, so ...
 18 Q. My question is a narrow one. He says:
 19 "To me the fire breaks would have to follow the
 20 ratings of the party walls ..."
 21 If matters had stopped there, would you have been
 22 confident in relying on Mr Crawford's advice or his view
 23 as expressed there in the circumstances I've put to you?
 24 A. Yes, because I know that it's going to go to
 25 Building Control to have a final overview and sign-off

193

1 that he's correct.
 2 Q. It sounds from that answer that it doesn't really matter
 3 what either Studio E or Exova are saying, because
 4 Building Control are there to pick up the pieces at the
 5 end if it's all wrong.
 6 A. I'm not sure they're there to pick up the pieces, but
 7 they are definitely there to advise and look at the
 8 compliance of the scheme against building regs.
 9 Q. Right.
 10 A. Yes, they are a check, aren't they?
 11 SIR MARTIN MOORE-BICK: But there is a risk, isn't there,
 12 there you're over-engineering this, because 120 minutes
 13 is obviously more than -- 120 minutes/60 minutes is more
 14 than the 90/30. If Building Control are satisfied with
 15 90/30 and you've spent money putting in 120/60, waste of
 16 money.
 17 A. Agreed, but if I've got a fixed contract with
 18 a subcontractor, and they're over-spec'ing something and
 19 they're ultimately paying for it, then --
 20 SIR MARTIN MOORE-BICK: You don't mind.
 21 A. -- I don't mind.
 22 SIR MARTIN MOORE-BICK: Okay.
 23 MR MILLETT: Tracing this through further, we have
 24 {SEA00013076}, which is an email from you, Mr Lawrence,
 25 to Ben Bailey and Ray Bailey at Harley, copied to

194

1 Neil Crawford and Simon O'Connor. You're forwarding
 2 an email which you had I think received in copy from
 3 John Hoban on 1 April, earlier that day, which he had
 4 sent to Neil Crawford at Studio E, setting out the
 5 Building Regulations contents in relation to the issue
 6 of elements of structure.
 7 You confirmed to Harley and copied to Studio E:
 8 "Gents,
 9 "The Building Control officer is now in agreement
 10 with the fire protection in the cladding being a 'cavity
 11 barrier' rather a fire stop as first thought."
 12 So that's where I think it ends from you.
 13 Did you have any thoughts at the time about whether
 14 the Building Control officer, having given this advice,
 15 and being now in agreement with the fire protection, was
 16 initially in error?
 17 A. Sorry, are you saying whether I thought the
 18 Building Control officer was wrong?
 19 Q. To start with, and there had been a debate through
 20 March, and it ended up with the Building Control
 21 officer, as you say, being now in agreement with the
 22 fire protection in the cladding being a cavity barrier?
 23 A. No, I wouldn't expect the Building Control officer to be
 24 wrong.
 25 Q. Now, if we move to {RYD00039964}, this is an email to

195

1 you from Daniel Osgood on 27 March 2015:
 2 "Morning Danny,
 3 "I understand you have landed at Grenfell ok this
 4 morning and are getting your head around Harley's façade
 5 package and the cladding. I have filed all of the
 6 information that we have (drawings & material info) in
 7 the following location [and you give it] ...
 8 "I'm sure it'll take a few days or so to get to
 9 grips with it so happy reading. Please pay particular
 10 attention to the Firebreak spec and insulation guide to
 11 ensure that they install correctly before any Building
 12 control inspection."
 13 Is it fair to say, just looking at that, that your
 14 concern here was to make sure that the firebreak spec
 15 and the insulation guide had been complied with and
 16 installed correctly before Building Control inspected
 17 it?
 18 A. Yes, as we should do, yes.
 19 Q. So, in this instance at the very least, you were not
 20 reliant on Building Control to get the firebreak spec
 21 right and to advise you on that and the insulation guide
 22 or installation; you wanted to make sure that all of
 23 those things were correct before Building Control
 24 inspected; is that a fair reading of this email?
 25 A. Yes. We should go through our -- as should the

196

1 subcontractors, go through their quality checks to make
2 sure that what they're -- what we are offering to
3 Building Control for inspection is correct to the
4 drawing and correct.

5 Q. Exactly.

6 A. So he is able to inspect and snag accordingly.

7 Q. Yes. So does this tell us that, as far as your
8 subcontractors were concerned, at least in relation to
9 this topic on this email, you weren't relying on
10 Building Control advice to get it right in the first
11 place; you were relying on your subcontractors to get it
12 right before Building Control inspected it, so that
13 Building Control would pass it?

14 A. Correct.

15 Q. Yes, and that that is an example -- if you like
16 a paradigm example -- in fact, of how you saw
17 Building Control throughout: really as a regulator
18 telling you whether you passed or failed, rather than
19 advising you on whether you would or not?

20 A. I think part -- I think both, actually. I would expect
21 our designers, specialists or otherwise, to get the
22 design correct and compliant in the first place, but
23 I would also expect that there are -- or there is highly
24 likely to be areas of the Building Regulations that they
25 need clarifying from Building Control, so I would expect

197

1 Building Control to give us advice and work with us on
2 that, which I believe is their remit, and then I would
3 expect them to check the drawings and specification to
4 say: yes, it is compliant with the building regs.

5 Q. Yes.

6 In that last answer, I note that you say you would
7 "expect Building Control to give us advice and work with
8 us ... which I believe is their remit". We explored
9 this a little bit yesterday, but since it's come back
10 again, I just need to ask you a question about that.

11 Was it your opinion and understanding at the time of
12 your involvement that Building Control were, if not
13 formally, informally part of your subcontractor team?

14 A. No, I wouldn't say they were part of our subcontractor
15 team, but I think as -- I think their role is to be able
16 to interpret the building -- they're in best place --
17 they're Government officials in best place to understand
18 the Building Regulations, most of which -- some of which
19 are extremely complicated. I expect design teams, as
20 they do in my experience throughout the construction
21 industry, to talk to the people that know the
22 building regs the best, ie Building Control, if they
23 have any queries and to interpret that, and Building
24 Control -- I don't expect Building Control to do
25 a design, to give them a blank bit of paper and them to

198

1 do a design, but I do expect them to collaborate with
2 the design team to ensure that the design and, in the
3 end, the installation is compliant and correct with
4 Building Control.

5 Q. Was that your experience on other projects as well as
6 the Grenfell Tower project?

7 A. Yes, although I actually found the Grenfell Tower --
8 John Hoban and Paul Hanson, to be very willing and --
9 what's the word? -- very willing to collaborate and
10 advise when required.

11 MR MILLETT: Yes.

12 Now, Mr Chairman, we're a few minutes away from
13 4 o'clock. We're really in the middle of a fairly
14 lengthy part of the story about cavity barriers.

15 SIR MARTIN MOORE-BICK: Is this a sort of convenient place
16 to stop?

17 MR MILLETT: This is as convenient a place as any to stop.
18 I can take stock and see how much of the rest of this
19 I actually need to go through.

20 SIR MARTIN MOORE-BICK: Yes, all right.

21 MR MILLETT: But before I ask you to rise, there is one
22 question I'm afraid I feel I have to just revisit this
23 afternoon on a document we looked at earlier, if I can
24 just do that in the minute or two that remains, and it's
25 the Lakanal moment email. I just feel there's

199

1 a question I need to ask you about it.

2 If you go back to it, it's {RYD00023468}. I put
3 a lot of questions to you this afternoon about this
4 document.

5 I just want you just to help me with this: this
6 document, I know, is a well known document in the
7 disclosure.

8 Did you have any assistance in preparing to give
9 evidence to the Inquiry today and in the last few days
10 about what sort of answers you should give in relation
11 to this document?

12 A. No.

13 Q. Are you sure about that?

14 A. Yes.

15 MR MILLETT: Mr Chairman, I have no further questions for
16 this afternoon.

17 SIR MARTIN MOORE-BICK: Yes, but you have some more
18 questions for Mr Lawrence tomorrow?

19 MR MILLETT: I do, yes. To set Mr Lawrence's mind at rest,
20 we will certainly finish tomorrow, unless anything which
21 is not reasonably foreseeable happens overnight --

22 SIR MARTIN MOORE-BICK: Well, yes.

23 MR MILLETT: -- from sources outside my team. So we should
24 finish comfortably within tomorrow.

25 SIR MARTIN MOORE-BICK: He would probably like me to ask you

200

1	whether he could hope to finish before lunchtime.	1	
2	MR MILLETT: That would be a reasonable question and I think	2	INDEX
3	the reasonable answer is: hope but not expect.	3	MR SIMON LAWRENCE (continued)1
4	SIR MARTIN MOORE-BICK: Oh, well, sorry, Mr Lawrence, that's	4	Questions from COUNSEL TO THE INQUIRY1
5	the best I think you can get.		(continued)
6	I'm sorry we have to ask you to come back again	5	
7	tomorrow, but at least we warned you of the possibility	6	
8	and I hope you have been able to make suitable	7	
9	arrangements.	8	
10	THE WITNESS: I have.	9	
11	SIR MARTIN MOORE-BICK: So we will break now and resume at	10	
12	10 o'clock tomorrow, and we will hope, without any	11	
13	undertaking, that you might get out by lunchtime, but we	12	
14	will do our best.	13	
15	THE WITNESS: Thank you.	14	
16	SIR MARTIN MOORE-BICK: All right?	15	
17	THE WITNESS: Thank you very much.	16	
18	SIR MARTIN MOORE-BICK: Thank you very much.	17	
19	Don't talk to anyone about your evidence or anything	18	
20	related to it over the break, and we will see you	19	
21	tomorrow.	20	
22	If you would like to go with the usher now, that	21	
23	will be fine. Thank you.	22	
24	(Pause)	23	
25	Nothing else today, Mr Millett?	24	
		25	

201

203

1	MR MILLETT: No, Mr Chairman, thank you.	
2	SIR MARTIN MOORE-BICK: Thank you very much.	204
3	10 o'clock tomorrow, please.	
4	(4.00 pm)	
5	(The hearing adjourned until 10 am	
6	on Wednesday, 22 July 2020)	
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

202

A						
a1 (8) 80:20 81:11,18 83:10 85:8,10 89:18 90:22	action (2) 71:9 73:23 actions (1) 72:6 actual (6) 2:8 34:23 43:20 63:9 132:19 133:1	78:3,12,15,24,24 79:4 83:6 160:1 194:8 agenda (1) 29:18 ago (8) 9:8 21:7,8 59:2 63:2 94:11 118:22 181:23	amendments (2) 101:22 102:20 among (3) 45:1 77:7 103:7 amount (5) 49:9 66:5 100:18 125:17 139:3	17:6 141:12,14 143:7,11 144:25 145:4,6,9 146:14,15 applicable (2) 6:20 17:14 application (2) 24:4 74:1 applied (3) 10:14 81:6 133:2 apply (4) 141:25 143:24 176:18 178:3 applying (1) 143:23 appoint (2) 141:3,21 appointing (2) 12:8 112:16 appreciate (4) 9:19 12:25 13:8 39:20 approach (4) 90:2 94:25 113:22 166:15 approached (1) 49:12 approaches (1) 82:9 appropriate (11) 5:11,21,24 27:22 49:11 83:5,23 84:11 88:7 98:3 107:7 approval (4) 5:16 18:15 156:16,20 approve (2) 5:21,24 approved (13) 15:18 16:13 17:1,5,9 18:5 24:20 28:11 118:13 119:25 181:24 188:12 189:9 april (19) 1:21 2:4,10 3:11,23 21:6,11 22:11 24:9,10 26:21 27:11 47:5 133:18,25 136:12 165:20,21 195:3 architect (9) 30:8 34:8,15 77:18 108:23 109:8 112:3 119:8 157:3 architects (1) 157:8 architectural (6) 12:20 35:7 146:11,14 147:11 149:3 architecture (6) 9:2,22 10:4 12:14 34:16 38:3 arconics (1) 11:2 area (5) 38:4,7 106:18 120:8 187:1 areas (6) 8:14 106:15,25 107:4 128:19 197:24 arent (1) 194:10 argument (1) 43:18 arguments (6) 41:18 42:15 43:7 44:6,13,13 arising (1) 161:25 armed (1) 47:23 aroom (1) 146:15 around (18) 53:13 71:3 98:9,16 99:4 104:16 118:24 122:19 161:16 162:10,14,15 164:12 167:8 175:20 179:5 183:5 196:4 arrange (2) 83:7 98:4 arrangements (4) 149:22,24,25 201:9 arrived (1) 77:14 art00003042 (1) 157:16 art0000654458 (1) 166:5	artelia (11) 26:20 29:15 40:23 69:14,16 105:10 159:24 160:4 166:4 169:24 170:13 articles (3) 141:24 143:6,10 asbestos (1) 158:9 asbuilt (1) 183:22 ascertained (1) 20:17 ashton (24) 110:11,14 112:1,23 113:9,16,24 115:7,11,21 116:2,23 117:8,16 120:4 121:19 122:3,10 123:12,19 190:17 192:14,23 193:5 ashtons (3) 122:5,25 191:2 aside (1) 171:14 ask (72) 1:6,24,25 2:20 8:6 13:24 14:18 16:1 17:3,5 18:8,12 19:2,6 22:7,8 24:10 27:24 36:7 39:8 56:10,22 57:13,15,17 58:2 59:12 60:6 65:5 66:23 71:6,7,16 75:20 77:4 78:14 79:10,13 82:17 84:17 86:25 90:24 101:2 102:13 103:5 105:15 112:10 119:17,25 125:15 129:6 133:16 134:6 135:24 138:11 150:21 152:2 153:18 155:22 157:15 167:20 171:20 181:1 183:2 185:9 186:23 192:23 198:10 199:21 200:1,25 201:6 asked (24) 23:1 34:2 37:6 39:19 40:21 49:7 72:17,23 73:15,22 86:18,21 97:3 119:23 135:7 136:24 137:4 138:8 150:7 169:11 184:23 191:2,13,21 asking (18) 23:3 65:8 77:14 93:17 102:18 107:16,18,19,21 112:1 126:18 136:2 158:5 171:22 179:7,22 185:10,18 asks (3) 110:14 122:3 190:24 aspect (1) 79:19 assembled (1) 65:20 assembly (1) 154:19 assessed (2) 7:6 9:8 assessing (1) 30:18 assessment (3) 16:12 70:23,25 assessments (1) 71:11 assist (1) 83:15 assistance (1) 200:8 assistant (3) 126:6 128:2,9 associated (2) 143:7,10 assume (14) 3:6 4:20 6:10 10:13,18 33:17,17,21 40:1 67:19 78:21 180:6 184:21 187:25 assumed (5) 9:13 61:11	115:14 132:22 164:8 assuming (4) 13:6 137:10 140:20 153:10 assumption (5) 77:21 86:24 109:6 120:11 186:9 assumptions (2) 107:20 186:1 assurance (2) 169:12 170:6 assurances (3) 170:3,5 171:17 assure (1) 171:15 assured (2) 169:25 171:3 attached (12) 3:1 22:18 65:19 101:7 107:23 110:8,15 113:19 184:19 186:14 191:17 193:15 attaches (1) 105:19 attachment (3) 101:12 106:3,4 attachments (6) 22:14 33:10,21 114:18 126:8 190:19 attempt (1) 113:22 attempting (1) 173:4 attempts (1) 103:18 attend (1) 42:12 attended (3) 26:12,12 28:20 attendees (1) 41:12 attending (2) 38:20,24 attention (5) 82:7 85:14 131:5 181:17 196:10 attract (7) 62:5 83:4 84:19 86:13 91:15 95:13,16 attracted (1) 84:23 attracting (2) 82:24 102:4 attracts (1) 83:2 august (3) 129:9 152:8 156:19 authored (1) 115:22 authorised (4) 141:8 142:5 144:23 146:20 authorities (1) 51:11 authority (2) 51:8,9 available (13) 12:18,21,23 13:14,15 14:6 20:7 83:2 84:12 96:19 142:2 165:24 166:1 average (1) 104:13 avoid (1) 168:17 aware (33) 10:23 11:2 20:11,13 25:6 33:1 35:6 50:10 55:10 57:5,22 60:4,21 70:9 75:12 82:14 83:1 121:2 138:15,18 139:19 147:16 148:20,21,23,24,25 149:2 157:7 168:21 182:22 183:17,19 away (6) 25:17 39:2 40:6 69:12 84:21 199:12
						B
						b (17) 15:18 16:13 17:1,5,9 18:6 118:13

119:25 141:10,23	125:14 127:19 140:23	big (2) 104:4 130:15	briefed (1) 38:23	130:2,18,25 156:11	189:1,7,11 190:3	59:16 60:22 62:13
145:19,24 146:6	145:1 148:14 153:8,17	biggest (1) 70:3	briefly (2) 157:12,13	buildup (3) 5:18 117:10	195:10,22 199:14	63:4 64:15,17 69:20
154:11 181:24 188:12	156:16,21,24,25 157:5	binding (1) 19:23	bring (1) 33:5	118:14	ccf (1) 148:17	87:16 190:8
189:10	160:20 164:17 173:5	bins (2) 161:19 162:19	brissenden (9) 98:21,23	bullet (8) 6:18 7:2	ceasing (1) 150:17	challenge (1) 155:18
b2 (2) 154:16,17	196:11,16,23 197:12	bit (26) 7:25 12:11 21:7	103:4,6 133:17 134:17	22:20 29:18 37:10	ceilings (1) 182:11	chance (1) 47:15
back (41) 5:12 21:5	199:21 201:1	28:15 34:4 47:12,18	135:2,24 136:5	74:23 131:6 174:7	celotex (32) 61:8,9,18	change (9) 29:20 32:20
23:7 24:6,8 43:5 46:21	beginning (1) 157:13	64:14 67:25 68:18	british (6) 5:18 18:22,24	bundle (1) 138:21	62:25 63:6 74:5,11,22	33:3 39:17,23
57:3 58:3 64:2 68:25	behalf (8) 34:10,11,21	71:1 93:20 95:3 97:23	19:3,4 137:16	burn (2) 122:13 170:2	75:16 84:14 85:1,1,3,9	100:7,19 101:23 159:8
74:3 94:10 98:7 105:1	39:5 118:18,18 143:23	103:2 114:4,6 126:6	brochure (2) 22:15	business (1) 142:20	97:5,13 115:9 129:21	changed (5) 86:8
113:9,9,16 114:15	166:22	130:13 140:6 162:4	129:16	buy (1) 88:8	132:21,23 133:10	147:12,13,15,16
115:14 116:11 122:5,9	behaviour (3) 7:7 9:9	178:4,23 179:10	broken (1) 134:9		136:16,21 137:6 138:9	changes (5) 24:15,20
134:15 135:9 140:2	14:19	198:9,25	broker (2) 98:13,23	C	146:25 147:22,24	25:2 35:22 131:20
144:21 155:11,13	behind (6) 29:9	black (2) 14:16 104:5	brokers (4) 98:9,15 99:6		151:6,7,23 156:6	changing (11) 24:16,17
156:4 164:25 165:20	104:13,19 117:18	blake (17) 26:12 28:20	100:3	c (2) 141:11 144:24	centre (4) 160:12 163:8	25:17 88:11,11,12,18
168:10 172:11 173:1	118:6 181:14	29:16 32:10,11,13,25	brought (1) 192:2	call (2) 27:15 149:4	175:1 178:10	94:21 100:24 148:23
181:6 186:8 191:15	being (26) 7:1 23:19	33:24 36:2,11 38:23	bruce (23) 2:25 3:12	called (2) 53:23 189:24	cep (5) 52:21 53:14	159:5
198:9 200:2 201:6	39:24 43:25 58:7 71:3	39:14 56:17 67:24	23:24,25 27:13	camden (2) 33:13 49:18	54:5,18,20	chaps (1) 157:20
background (4) 157:19	72:22 78:24 80:10	68:17,23 151:10	29:1,16 34:5,15	came (12) 42:11 43:3,5	cep000003223 (1)	charts (1) 3:16
163:17 166:7 180:9	81:17 83:5,14 93:8,9	blank (1) 198:25	40:15,24 41:8,13	60:12,15 62:1 90:14	56:12	chase (1) 28:14
backing (2) 18:16 19:11	112:18 125:4,25	block (5) 60:18 92:25	42:18 45:3 65:10	108:9 150:13 169:5	cep0000032232 (1)	chat (1) 94:9
backtoback (2) 84:5	138:16 155:23 162:25	94:4 104:4 181:16	69:15,20 105:18 108:7	170:3 193:17	56:13	cheap (2) 30:14 31:15
146:1	166:25 178:24	blocks (2) 19:18 56:1	184:17 191:11 192:6	cannot (4) 95:18 170:16	cep0000032235 (1)	cheaper (2) 33:4 66:16
backwards (3) 76:25	195:10,15,21,22	blow (1) 114:25	brushed (2) 45:5 70:2	171:4 174:24	56:22	cheapest (1) 49:12
125:5 164:15	belief (1) 43:18	blue (4) 9:1 103:12	bs (10) 15:10,11	cant (16) 9:5 25:16	certain (2) 27:25 52:19	check (14) 13:24 18:8
bailey (4) 56:17 151:5	believe (41) 14:17	104:10,15	130:1,5 133:4	35:8 52:13,14 106:2,5	certificate (54) 1:21,25	19:14 77:23 78:5,8,14
194:25,25	18:12 22:2 23:21,25	blythe (3) 27:13 29:15	137:10,11 138:1	109:24 118:21	3:4 4:9,14,23 5:10	102:12 124:10 138:18
balls (1) 100:8	43:2,14 46:6,18 52:25	69:14	153:22 154:9	137:15,23 149:16	6:2,8,11,14,16,22,25	172:6 192:25 194:10
banner (1) 130:15	54:14,17 57:21 58:16	board (9) 5:19 18:24	bs1 (1) 15:3	162:12 164:4 167:14	8:24 9:3,24 10:10,19	198:3
barrier (13) 116:17	62:21 66:6 68:14	19:4 74:21 95:16,17	bs2 (1) 14:24	189:18	11:16,17,20,24 12:1	checked (16) 3:16,17
117:20 120:21	77:22 79:21 81:21	129:22,25 152:5	bs476 (2) 136:18 137:2	capable (1) 109:2	13:3,8,11,13 14:5	17:13 77:20
187:7,8,24	93:6 94:16,16 99:24	boards (2) 75:16 154:15	bs8414 (1) 154:19	care (1) 18:20	18:9,24 19:5,15	78:2,12,19 79:4 95:13
188:4,10,15,21 190:3	105:2,12 106:17	body (1) 32:1	bs841422005 (1)	carefully (1) 17:12	20:5,10,18 21:4,19	108:25 122:1 134:19
195:11,22	110:16 111:1 120:20	bold (1) 153:21	136:18	carl (5) 70:23,24 71:12	22:1 32:20,25	139:5 147:11 156:13
barriers (21) 54:6,8,9	125:5 153:6 159:12,25	booked (1) 139:5	budget (8) 23:22 25:16	72:19,20	55:15,18	157:4
107:8,20 118:24 120:5	163:14,14 177:22	booth (9) 26:20,23	26:1 30:11 33:6 43:10	carried (8) 8:17 14:10	152:2,4,17,21	checking (4) 79:5 159:7
124:15 172:4	191:4 192:8 198:2,8	27:12 29:15 69:16	66:14 75:21	50:8,11 57:18 70:24	153:5,19 155:22,25	186:18,20
181:6,14,22 182:23	believed (1) 171:2	157:17 160:4 166:8	budgets (2) 96:5 100:24	94:4 138:2	156:8 165:20 181:7	checks (1) 197:1
183:4,6,15 184:10	believes (1) 185:17	169:24	build (1) 142:20	carry (4) 1:10 49:15	certificates (1) 5:19	chelsea (1) 141:19
189:1,7,11 199:14	believing (1) 20:1	bore (1) 28:9	buildability (1) 126:13	121:16 161:22	certification (13) 4:25	chimney (2) 106:20
base (1) 89:8	bells (2) 75:14 112:2	both (19) 3:3 4:2	building (126) 5:22,25	69:24 101:25	5:1 6:18 10:21 35:24	169:1
based (10) 18:9 19:25	below (17) 3:17,21	10:8,14,15 16:3 58:21	6:19 7:8 9:4 14:3	cashes (2) 166:3,24	36:3,13,24 129:13	choice (7) 25:22 45:4
24:4 46:16,17 66:17	12:11 15:7 27:15	59:16 61:9 69:20	15:18 18:21 21:16	casings (3) 76:13	131:10,10 132:13	46:3,13 47:24 70:1
96:21 102:18 126:10	35:21 47:15 89:24	74:25 83:9 107:24	25:12 26:8,15 30:25	122:19 123:16	133:6	76:21
181:3	93:24 103:14	146:16,17 149:25	34:20 37:5 38:6 40:19	cassette (24)	cetera (20) 4:21,21	choose (1) 68:1
basic (1) 113:22	114:14,16 116:17	184:20 190:9 197:20	50:7 51:7 57:8 67:5	10:3,14,21,23 11:3	15:20 18:16 21:16,16	choosing (1) 58:21
basically (2) 95:1 100:7	120:5,20 131:6 182:10	bottom (32) 3:9 9:21	69:25 71:12	12:19 13:2 21:2 24:19	22:23 44:17	chronology (1) 121:16
basis (3) 32:19 86:1	ben (3) 151:5,9 194:25	27:11 29:2	72:3,10,14 73:8,22,25	25:19,25 54:20,25	93:9,10,14 99:25	cill (1) 189:2
164:5	benefit (4) 3:19 48:18	35:17,18,20 40:14	74:1 85:19 103:25	55:9 56:7 58:15,19	100:1 104:1 139:4,4	circumstances (5)
bat (6) 47:14	68:7,9	45:23 47:5 65:13	108:3 109:15,20	65:7 66:2,18 68:21	160:14 161:19,20	134:24 152:19 192:22
48:6,7,11,15 191:6	benefits (3) 68:11,11	71:20,22 72:1 92:13	111:20 112:9,10 113:7	69:6 70:5,11	162:19	193:6,23
battens (1) 72:5	80:23	114:23 115:2	117:24 121:4	cassettefixed (1) 68:2	cg100000224119 (1)	clad (1) 72:4
batting (1) 186:8	best (12) 14:12 32:3	117:14,23 122:18	124:2,6,12,13 125:3	cassettefixing (1) 25:8	17:6	cladding (138) 8:15 9:2
bb100 (1) 80:22	93:25 94:3 124:10	123:15 143:19,21	131:21 142:2 145:2,23	cassettes (7) 65:20	cg10000022482 (1)	11:15,23 12:14 13:1
bba (28) 1:21,24 3:4	150:8 177:13	152:7 161:13 162:9,11	150:14 152:19 155:7	66:24 67:3,6,10 71:1	181:24	22:13,19 24:16,23
4:9,14 5:10,19	189:16,17,22 201:5,14	167:18,18 169:8	156:14,23,25 157:22	134:11	chain (25) 41:13 44:10	26:8,15 27:4 28:1,6,10
6:2,8,11,14 14:5 18:9	bethel (1) 101:3	176:20 187:22	158:2,16 159:4,18	casting (2) 164:25	74:1 79:23,25 80:4,5,7	29:6 32:20 35:6,23
20:5,10 21:4,18	better (8) 3:17 41:5	box (1) 29:3	160:13 161:18	174:13	81:1,3 82:18 83:12,13	37:12,23,24 47:7
33:20,25 35:24	46:6 63:21 88:8 98:15	boy (2) 68:10 69:2	162:3,10 163:10 165:2	catch (3) 3:2 21:9,10	85:6 92:15 94:3	49:8,9,16 50:6,10
36:3,13,24 55:15	116:2 121:2	br (4) 80:22 89:20	167:24 168:3	cause (2) 162:21 186:11	101:11 114:2,4 116:12	51:18,24 53:4,22,23
129:12 153:22 165:20	between (39) 10:3 21:1	130:2 154:8	175:3,7,19,20	caused (1) 57:23	117:13 121:18 122:24	54:3,4,10 57:6 58:6
181:7	24:25 25:23 30:21	br135 (1) 154:19	176:15,19 177:10	caveat (1) 153:16	123:17 193:10	59:17 60:22 63:12
bca (1) 181:22	31:3 40:3 53:14 55:9	brand (1) 38:6	178:12,17 179:6 180:3	cavities (3) 117:18	chains (1) 94:16	65:11 66:11 68:2
bearing (2) 19:17 66:7	58:24 65:7 66:6	bre (2) 22:22 74:21	181:15,18	182:7 183:5	chaired (1) 169:24	69:16,22 70:1
became (4) 61:20 76:20	68:20,21 79:23 80:8	breach (1) 19:24	182:8,10,13,25	cavity (39) 54:6,8,9	chairman (11) 1:15 59:7	72:4,9,10,12,15
148:21 156:18	82:15 94:1 97:4,13	breaching (1) 181:19	184:11,13 185:24	107:8,20 117:20,23	63:19 64:13 125:8	73:1,13,22 76:8,16
before (50) 2:10,11	106:19 108:22 116:7	break (16) 63:24 64:7	186:2,2 192:13,24	118:24 120:5 122:18	127:17 172:3 177:6	83:1,9 87:15 88:17
3:23 14:7 19:9 23:14	119:7 121:12,15,18	65:7 74:6 125:14	193:1,25 194:4,8,14	123:14,20 124:15	199:12 200:15 202:1	91:14 94:21 95:15
39:2 41:25 54:1 57:14	126:1 137:18 145:23	127:1,19 135:3 168:8	195:5,9,14,18,20,23	172:4 181:6,14,22	chalcots (30) 41:21	96:17 103:22,25
65:7 66:3 74:5,17,24	149:3,17 161:7	172:5,10,20 173:5	196:11,16,20,23	183:3,4,6,7,8,14	48:24 49:18,21	104:11
75:11,15,17,23 76:4	168:16,25 169:19	191:14 201:11,20	197:3,10,12,13,17,24,25	184:10 187:7,8,23	50:19,21,21 51:6,14	106:15,19,20,24 107:4
79:16 86:18 90:5	183:7 185:7 190:3	breaks (4) 184:20	198:1,4,7,12,16,18,22,22,23,26,27	188:3,9,15,20	52:7,10,16,23	111:1,12,14 117:19
92:25 108:15	beyond (1) 181:10	191:15 192:19 193:19	199:4		53:18,24 54:7	122:19 123:15
111:7,11,19 117:15	bid (1) 96:21	brief (1) 32:13	buildings (4)		55:14,24 56:1 58:6,19	132:17,19 133:2,3

154:18 158:3,4,9 159:20,22 160:5,8,12,24 161:3,8,13,15,18 162:2,15 163:1,9 166:8,10,11 167:5,5,11,18,25 168:7 169:4 171:2,15 173:22 174:6,12,19 175:2,5 176:1 177:19,22,23,25 178:11,14,16 179:12 180:2 181:15,19 183:14 184:24 195:10,22 196:5 claddingcomponents (3) 173:16,20,21 claddings (1) 14:6 claire (44) 26:22 27:13 39:10 40:24 60:11,15 65:10,14 66:23 69:15 72:16,20 73:11,16 89:10 90:1,15,24,25 91:10 92:2,16 103:8 105:9 157:16 158:22,24 159:25 160:3,16 161:17 162:13 164:15 165:11,11 166:13,16,19 173:11 174:15 175:16 177:5 178:13 claires (1) 177:13 clarification (10) 110:23 160:7 161:2 164:2 165:3 166:14,25 167:3 180:1 184:25 clarified (2) 95:9 110:3 clarify (2) 3:18 111:4 clarifying (1) 197:25 clarity (1) 188:20 class (36) 7:9,16 8:1,2,6,9,18 9:10 11:4 15:12,17,23 16:2 35:25 36:4,7,13,24 38:23 43:19 80:19 81:11 83:10 85:8,10 89:17 100:5 120:19,23 121:13 122:11,13 123:6 130:4 136:18 137:1 classification (6) 14:24 15:3 16:2 37:14 131:18 137:16 classifications (3) 10:24 16:23 85:16 classifier (1) 81:6 clause (2) 16:14 144:13 clean (1) 65:16 clear (19) 3:3 13:12 35:9 39:3 54:19 56:24 86:4 91:4,19 107:10 122:16 135:17 151:2 170:17,22 175:23 176:23 178:21 179:16 clearly (1) 81:15 clerk (1) 151:11 clg0000022483 (1) 183:3 client (17) 25:15 42:5 45:3 47:24 68:1 69:10 84:20 86:3 88:6 96:1,19 157:5,6	165:16 166:13 184:5 186:19 clients (4) 23:21 43:10 96:4 100:24 close (2) 82:7 183:4 closely (2) 49:3 116:5 closures (1) 183:3 coated (3) 37:11,14,20 coating (2) 12:21 14:23 collaborate (2) 199:1,9 colleagues (1) 49:13 colour (7) 3:16,18 16:11 20:24,24 44:20 69:22 colours (11) 4:20 6:10 12:21 16:10 21:15 27:4 34:8 44:15 46:5 47:22 99:25 column (5) 76:13,16 122:19 123:16 173:22 columns (4) 106:18 162:10 167:8 174:6 combination (2) 83:8 129:2 combustibility (6) 118:3,15 121:7,13 154:15,22 combustible (2) 117:19 118:5 come (36) 1:6 5:12 14:9 19:22 34:22 35:19 40:22 46:21 51:5 52:4 53:2 62:7 63:19 64:1 68:10 69:2 74:3 76:1 88:16 91:1 95:24 97:7,9 100:7 134:13 147:18 149:7,15 150:11,16 165:9 172:10 174:19 190:2 198:9 201:6 comes (12) 45:9 47:17 80:19 85:25 89:17 113:9 122:9 126:12 145:6 174:23 175:3 183:13 comfort (1) 58:20 comfortably (1) 200:24 coming (5) 61:7 138:24 149:18 150:22 158:24 comment (9) 108:2 109:8 110:15 112:1 119:10 120:5 171:8 180:22 190:25 commenting (2) 41:2 185:4 comments (1) 43:5 commercial (4) 95:24 97:10 143:18 145:14 commonly (2) 142:22 188:17 commonplace (1) 111:18 communal (2) 8:14 104:1 communicate (2) 32:25 60:16 companies (1) 148:23 company (11) 5:14 53:19 55:22 57:2 58:4 59:13 95:20,21 107:2,11 150:18 comparable (1) 132:20 compare (3) 68:19 136:8,9	compared (2) 67:21 86:20 comparing (2) 23:5,15 comparison (8) 30:14,21 31:13 40:3 85:12 97:4,13 173:13 compartment (3) 183:9,9,15 compartmentation (1) 182:20 competent (2) 20:2 132:5 competitor (1) 62:25 competitors (5) 44:24 45:10,15 46:1 62:25 complete (5) 96:18 111:15,17,20 154:19 completed (4) 72:16 101:25 143:8,11 completely (5) 6:12 74:4 100:19 170:1 186:6 complex (1) 101:1 compliance (18) 6:19 17:13 34:20 141:7 154:25 159:17 160:12 163:8 165:1 166:11 175:1,9,17 177:17 178:10 179:8 193:1 194:8 compliant (9) 19:16 44:2 124:1,5 155:7 157:4 197:22 198:4 199:3 complicated (1) 198:19 complied (5) 124:8 140:12 141:16 186:19 196:15 complies (1) 183:8 comply (6) 141:8 144:23 162:6 174:8,15 184:5 component (2) 153:24,25 components (8) 95:19 131:19,20 132:19 133:1 154:1 173:22,23 composite (10) 29:5,21 30:22 41:18 42:16 43:8 44:6,13 76:16 134:11 composition (1) 116:25 comprise (1) 12:15 comprised (1) 144:5 computer (1) 125:18 concealed (3) 65:17 182:7,12 conceded (1) 41:22 concentrate (1) 128:13 concentrating (1) 128:16 concern (12) 44:1 62:7 68:1 116:22 123:18 161:17,19,25 162:16,16 169:11 196:14 concerned (8) 28:2 38:16 116:22 151:7,9 162:20 191:5 197:8 concerns (6) 57:6 62:20,22 111:23 117:1 168:22 concise (1) 39:3	concludes (1) 130:23 concrete (10) 76:16 173:16,19,25 174:11,18 176:24 177:22,23 179:11 condition (1) 144:2 conditions (7) 27:2 141:25 142:8,10 143:5,22 153:19 conducted (1) 155:5 confident (2) 19:20 193:22 confirm (10) 47:10 106:14 120:22 134:3 141:3,19 143:9 154:3 179:20 182:2 confirmation (1) 105:23 confirmed (7) 16:11 29:6 74:15 77:20 87:19 96:22 195:7 confirms (1) 70:3 conform (3) 18:22,23 19:3 confused (2) 3:19 189:23 confusing (1) 189:23 connected (1) 164:12 connection (2) 161:7,10 conscious (5) 61:16 106:22 107:1,2 121:2 consent (4) 144:15,15 147:4,8 consequence (1) 15:16 consider (4) 43:7 124:6 132:19 171:4 considerable (1) 44:19 consideration (4) 14:5 62:10 67:20 99:5 considered (3) 23:19 43:16 131:21 considering (3) 62:14 99:3 112:19 constitute (1) 143:5 constraints (1) 30:11 construct (1) 146:19 construction (23) 2:5,16 17:12 73:6 78:2,12,14 79:3 82:12 110:21,24,25 111:19 113:25 116:22 121:6 128:5 155:16 182:7,10 187:16 188:18 198:20 consultant (4) 25:1 26:6 29:14 112:8 consultation (1) 184:13 consulted (1) 192:25 contact (3) 89:24 92:23 93:24 contacted (2) 89:25 96:16 contained (2) 6:8 146:11 content (1) 63:9 contents (3) 145:8 146:5 195:5 context (13) 55:19,25 73:6 79:14 80:2 138:6 140:7 155:9 160:23 162:25 163:12 167:25 180:14 continue (2) 59:8 64:9 continued (5) 1:7,14 103:18 203:3,4	continuing (1) 40:10 continuous (3) 117:23 122:18 123:14 contract (26) 14:2 53:14 84:6,8 87:1 88:7 119:18,21 127:23 128:8 141:18 142:1,2,5,16,22,25 145:11,23 146:2,17,17,18 157:22 158:16 194:17 contracted (1) 109:6 contractor (6) 11:22 26:25 49:12 72:8 141:21 166:16 contractors (5) 11:14 144:11,15 168:1 174:6 contracts (9) 127:23 132:5 138:15 140:9 145:3 146:16 147:7 151:15 152:16 contractual (11) 20:4 101:21 102:12,19 124:4 140:3,5,12 149:22,24,25 contractuallywise (1) 52:11 contravened (1) 14:3 contributed (1) 169:1 control (49) 5:22,25 51:7 72:14 73:22 74:1 108:3 109:15,20 112:9,10 113:7 124:12,13 125:3 138:20 139:2 156:14 184:13 185:24 186:2 192:13,24 193:1,25 194:4,14 195:9,14,18,20,23 196:12,16,20,23 197:3,10,12,13,17,25 198:1,7,12,22,24,24 199:4 controls (1) 108:3 convenient (4) 59:8 172:4 199:15,17 conversation (20) 21:13,24 22:3 34:23 92:12 94:24 103:10 121:14 124:12 135:1 161:16 162:12,13 163:15,17,19 191:13 192:1,5,8 conversations (5) 76:23 92:3 94:17 125:2 161:16 convinced (1) 65:21 coordinate (1) 184:2 coordination (1) 126:13 copied (39) 26:21 27:12 28:18 40:16 47:6 65:10 69:15 89:9 96:10,24 101:3 103:7 110:11 113:11,17,23 114:2,11 116:13 117:15 118:1 120:15 121:20 122:8,8,22 123:24 137:12 157:18 160:4 162:4 164:15 165:11,12 184:16 185:7 190:18 194:25 195:7 copies (3) 41:9 82:20	191:10 copy (3) 117:25 178:19 195:2 copying (1) 116:7 core (11) 13:14,15,16 14:6,13,15 37:18 54:13 56:5 58:12 60:23 cored (1) 62:11 cores (1) 20:7 corner (3) 114:23 129:9 187:22 correct (48) 18:16 32:17 47:10 49:23 53:25 55:1 56:2 57:1 58:11 61:3 62:9 67:17,22 68:4 69:7 70:6 77:19 88:13 101:18,19 110:17 117:11 120:12 121:25 128:3 139:21 140:21 154:10 155:8 156:13 164:24 166:23 174:1,21 182:4,17 185:11,17 186:1 187:14 189:3 194:1 196:23 197:3,4,14,22 199:3 correctly (2) 196:11,16 correspondence (7) 105:3 114:16 116:16,20 119:6 120:20 164:16 cost (17) 35:7 39:19 42:4 47:21 48:3,4 65:18 66:5,17 69:4 79:19 97:4,12 101:8,16 102:6,8 costings (1) 3:18 costs (4) 23:17 24:6 96:4 158:5 couldnt (11) 2:11,11 13:7 20:17 132:9 135:7 139:21 142:9 159:12 165:13 179:3 counsel (2) 1:14 203:4 couple (4) 35:21 125:9 153:15 172:8 course (4) 17:9 27:20 39:2 112:22 cover (6) 2:14,14,15,15,15,16 covered (4) 10:9 115:24,25 167:11 covering (2) 72:9 116:5 crawford (31) 77:8 105:18 108:7 110:10 111:25 112:23 113:10,16 114:10,15,19 116:14 117:16 120:16 121:19 122:1,5,9,25 123:12 184:16 190:15 191:2,9,21 192:4,6,21 193:4 195:1,4 crawfords (2) 191:8 193:22 create (1) 169:25 created (2) 75:21 168:25 credit (1) 150:17 criteria (2) 130:1 154:8 critique (1) 6:14	cross (4) 3:16,16 109:10 113:14 crosscheck (1) 4:18 crosschecked (3) 4:16 6:3,9 crossed (1) 109:13 crown (1) 120:8 curing (2) 174:10,17 current (1) 142:13 cursor (1) 130:10 curtain (8) 94:2,2 140:16 176:8,10,18 177:2 178:2 cut (2) 160:10 178:13 cwct (17) 22:16,21 163:9 165:1 167:23 168:2 175:2,7,17 176:6,15,22,23 177:18,25 178:11 179:9 <div>D</div> d (2) 100:21 141:13 d0 (2) 14:24 15:3 daj (1) 77:19 damage (3) 56:10 57:20,23 damaged (1) 56:4 danger (1) 182:12 daniel (9) 56:17 77:19 105:17 114:10,15 116:15 120:16 122:2 196:1 danny (1) 196:2 dare (1) 125:19 dark (1) 9:1 dashed (1) 187:2 data (3) 22:23 146:15,15 database (1) 158:5 datasheet (4) 129:6,8 134:18 135:25 date (23) 2:8 27:20 55:15 56:14,14 69:19 79:25 93:8 100:22 105:2 106:12,12 115:23 133:25 134:17,22 139:9 148:2,12 149:16 164:12 171:4 190:7 dated (7) 22:11 26:20 29:13 45:1 56:12 101:4 140:24 dates (2) 49:21,24 dave (4) 98:21,23 149:18 150:12 david (6) 103:6,7 105:9 135:2 157:25 168:12 day (26) 1:18 2:23 3:11,23 14:4 32:10 39:10 40:23 47:18 65:12 67:25 83:20 85:25 92:7 93:21 100:22 108:15 113:10,17 114:6 117:16 136:12 158:19 160:3,19 195:3 days (3) 90:5 196:8 200:9 db (1) 11:22 deal (7) 40:2 85:25 86:1 92:11 94:17 109:22 176:7
--	---	--	--	---	---	--

dealing (4) 139:16 176:24,25 177:1	44:17 70:15,16 90:15 92:17 93:24 113:13 131:11 160:21 171:5	directs (1) 167:5 disadvantages (1) 43:12 disagree (1) 36:23 disaster (3) 13:17 43:21 150:16 discharge (2) 27:1,6 discharging (1) 124:19 disclosure (1) 200:7 discover (1) 113:23 discovered (2) 116:23 191:21 discovering (1) 102:8 discuss (8) 12:3 21:21 25:1 26:7 42:3 76:21 92:17 94:21 discussed (17) 21:18 27:1 31:22 34:2 36:17 41:15 42:4 47:1 77:13 93:9 116:9 125:25 140:4 151:4 156:15,17 157:13 discussing (7) 29:16 31:5 35:12 42:21 44:15 59:21 99:4 discussion (30) 23:5,24 25:4,5,22 30:2 36:10,20 40:7,8 42:6,11 48:24 64:14 66:2 77:11 80:1 81:5 92:1,11 95:5 98:13 109:1 119:11 147:14 157:24 163:1 167:2 170:22 190:10 discussions (17) 28:14 36:18 42:8 44:11 80:8,10 90:4 99:24 104:24 108:22 149:2 157:7 179:5 180:8 185:6,7 186:13 dismissed (1) 82:6 disparity (1) 168:16 distinction (2) 10:2 61:4 distribution (1) 56:16 divided (1) 128:18 document (52) 2:3,5 9:6 15:18 16:13,20 17:1,5,9 18:6 22:16,21 32:8 46:18 56:11,16,19 57:14 59:13 67:23 71:4 76:1 78:1 101:15 115:22 118:13 119:25 129:11,19 130:6,12 131:8 133:21,23 134:12,25 135:5 152:9 153:16 154:24 159:13 181:10,23,24 184:14 188:12 189:10 199:23 200:4,6,6,11 documentary (1) 138:25 documented (1) 76:24 documents (15) 4:8,19 69:12 77:24 78:18,19 115:15,19 136:5 144:8,13 147:14 164:21 166:10 179:23 does (23) 8:6 13:6,21 19:22 48:15 74:14 84:10 86:16,22 117:4,7 118:11 121:10 133:21,23 136:4 139:18 142:14 154:5	176:18,25 177:1 197:7 doesnt (14) 3:7 44:12 75:14 88:12 115:7 117:4 134:3 136:1 137:15 148:2,13 154:22 179:22 194:2 doing (10) 47:2,3 51:1 69:8 79:5,6 102:23 110:25 113:13 125:6 dom (1) 141:25 dom2 (5) 142:8,21 143:6,10,22 domestic (2) 143:6,9 done (28) 7:13,13,17 16:22 19:18 21:12,17 23:4 45:16 47:15 50:15 51:7 52:15 78:22 90:11,25 91:24 93:1 97:15,17 100:22 116:6 130:17 136:2 165:8 175:25 186:17 190:5 dont (151) 2:8 4:19,21 5:8 6:6 7:3,17 10:1,11 11:19 13:9,11 15:6,25 18:12 19:6 21:12,13,13,20 22:2 23:3,21 25:5 26:10 33:17 37:16 38:25 41:17 42:8,13 43:14 44:18 45:11 48:9,22 52:19 56:20 57:21 62:21 63:25 65:2,22 71:3,3,13 72:22,22 73:10,14,17,17,17,20,20 75:9 78:16 79:7 80:11 81:7,20 82:1 86:20 90:16,16 92:3 94:24 97:1,6,16,16 98:25 101:11 102:2 103:1 105:12 108:25 111:1 114:20 115:10 119:11,14 122:21 123:2,3,8,11,17 126:11 131:13 132:8,22 133:13 134:1,21 135:13,14,15,16,18,23 136:2,3,25 137:3 138:6,21 140:1 143:13,14,14,16 153:8,12 158:10,18,19,21 162:9,24 163:3 164:8,12 169:19 170:7 171:10 175:12,22,22 176:7 177:20 178:21 179:16 180:17,21,23 185:22 186:16 189:3,14,15,18 191:4 192:2,8,12,16 194:20,21 198:24 201:19 door (4) 37:11,19 38:6 181:19 doublecheck (1) 185:25 doubt (3) 7:3,24 34:22 down (31) 6:17 11:10,11 28:19 34:4 35:2,20 39:18,24 41:20 46:5 56:3 60:9 69:4 76:10,12 79:25 80:15 81:1 97:24	104:4 116:20 130:13 134:16 145:17 149:25 153:19,20 154:12 166:7 178:17 draft (1) 142:1 drawing (13) 85:13 114:22 117:20,21 119:20 141:13 186:25 187:9,22 188:1,3,25 197:4 drawings (21) 5:18 77:19 78:21,23,23 113:20,21 118:21,23 119:3 120:12 167:10,14 184:19 186:14,23 187:17,17,20 196:6 198:3 drive (1) 69:4 driven (1) 100:14 drop (2) 100:10 127:19 dual (1) 83:8 duo (2) 83:24 87:9 duoslab (3) 83:3 87:18 96:14 durability (14) 23:6,9,9 30:2,16,17,20,22 31:6,14,18 36:11,21 80:25 durable (1) 31:7 duragloss (3) 12:20 14:23 15:1 during (3) 2:16 75:5 151:14 E e (40) 5:20,23 6:3 11:4 12:3 20:12 29:1 34:6 38:19,24 41:9 79:8 100:21 107:18,19,21,24 108:2,12,17,23 109:1,21,22 110:22 124:10,11 125:2 171:20,23 184:16 185:4,8,10,25 186:8,20 194:3 195:4,7 earlier (24) 55:16 65:12,25 67:19 68:18 79:14,24 85:6 87:19 89:16 103:4 110:5 116:20 122:16 129:13 144:24 151:15 171:7 175:6 181:8 182:1,14 195:3 199:23 early (5) 27:21 50:2 83:20 99:12 125:10 eco (32) 62:4,5 77:1 79:15,18 80:2,10 82:24 83:2,4,15 84:5,24 86:2,3,9 87:24 89:1 91:15 92:5 95:13 96:3,15,18 97:15 100:13 101:7 102:4 103:19,22,24 135:2 economic (1) 39:21 economically (4) 101:22 102:13,19,24 edged (1) 12:18 edges (1) 183:5 edition (2) 142:13,22 effect (5) 95:23 98:10 106:20 110:16 169:1	effectively (1) 14:16 eg (1) 182:10 either (23) 12:18 15:25 16:18 52:21 59:22 62:22 81:9 94:22 99:5 105:9 112:16 128:18 133:9 138:7 139:16 149:2 150:4,9 153:2,12 159:23 188:2 194:3 element (2) 139:17 160:1 elements (3) 153:24,25 195:6 elliott (17) 60:7 79:24 80:8,17 81:16 85:13 88:14 89:8 90:5,15 91:4 92:12 93:22 95:7 97:22 98:7,24 elliotts (3) 82:18 90:21 91:13 else (14) 30:4 36:24 61:7 73:15,19 82:16 98:16 101:1 133:5,9 148:7 159:16 179:2 201:25 elsewhere (4) 41:5 70:14 175:13 177:18 email (199) 1:19 2:21 3:11,17,21 6:1,5 21:5 22:10 26:16,19 29:13 32:9,12,12 33:7,18 38:19 39:2,9 40:6,13,14,23 41:1,13 42:7 44:25 45:19 47:4,6 48:8,22 60:7,16 61:23 62:1,23 65:9,12,14 67:23 68:17,22 69:14 76:24 78:2 79:23 80:7,11,16 81:1,3,14,16,21,23 82:6,18,18 83:12,13,16 85:6,18,21,24 87:2,8 88:11,14,20,21 89:3,7 90:21 91:1,12,13 92:2,9,13,15 93:20,24 94:20 96:7,10,24 97:22,24 98:14 100:5,6,11 101:3,5,11,12 103:6,10,14 105:4,16 106:2 107:22 108:5,6 110:5,6,8 113:24 114:9,14,19 116:5,6,12 117:3,13,25 118:2,8,10 119:6,12 120:14 121:18 122:9,16,21,24,25 123:12,17,24 124:21,24,25 125:17,22,23 126:15 133:16,17,19 134:15,17,22 136:12,25 137:3 138:6 157:16 160:3,15 161:12,25 162:18,25 164:9,13,18 165:4,6 166:20 167:5 173:2,6,11 174:15 175:16 177:8,14 178:5,14,21,22	180:5,7,8,13,13 181:3 184:15 186:15 190:15,18 191:10,20 193:13,15 194:24 195:2,25 196:24 197:9 199:25 emails (19) 26:17 35:9 44:10 45:19 85:24 86:20 87:25 91:5,18,23 94:16 95:4,7 105:1,3 114:1 125:16 126:7 164:11 embrace (1) 100:12 emphasising (1) 180:19 employ (1) 185:15 employed (1) 19:8 employer (2) 141:20 146:11 employers (1) 74:15 employing (1) 18:14 en (3) 14:25 15:4 136:19 enabling (2) 110:25 111:11 end (7) 46:18 57:4 109:14 148:21 155:14 194:5 199:3 ended (2) 44:18 195:20 ends (1) 195:12 energy (9) 98:9,13,16,19,23 99:6,9,9 100:3 engaged (1) 45:9 engagement (1) 44:24 engaging (1) 142:23 engineer (2) 109:12 113:1 engineering (4) 22:21 23:15 32:23 69:4 england (2) 7:9 16:12 enhanced (1) 129:24 enlighten (1) 8:7 enough (7) 119:2,4 126:5,17 180:17,21,23 ensure (11) 11:14,23 17:13 18:20 87:4 96:14 124:5,19 140:11 196:11 199:2 ensuring (2) 28:10 183:22 entire (2) 91:5 130:5 entitled (2) 145:24 173:15 entrance (1) 162:15 entry (1) 145:17 envelope (5) 141:4 167:19 175:19,20 177:1 envelopes (9) 160:14 163:10 165:2 167:24 168:3 175:3,7 176:16 178:12 environmental (3) 101:24 102:5,21 envisage (1) 93:4 equally (1) 63:14 equipment (1) 101:8 error (1) 195:16 ertness (1) 171:23 essential (2) 86:14 181:16 essentially (1) 177:6 essex (2) 68:10 69:2
---------------------------------------	---	--	---	--	--	---

establish (1) 113:22	173:4,13	50:22 71:25 72:3,4	feedback (1) 94:13	161:2,8,9,19 162:1	138:9 177:16 178:4	82:25 83:3,4,15,24
estate (5) 49:18 51:14	exhausted (2) 41:18	73:6 78:2,11,14 79:3	feeds (1) 146:7	165:23 168:24 169:1	180:7	84:5,11,12,20,24
55:24 56:1 64:17	44:12	94:7 95:20	feel (6) 69:22 98:9	170:4 171:1 175:8	focusing (4) 53:18	86:2,3,9,14,23 87:4,24
et (20) 4:21,21 15:20	existed (1) 170:13	104:11,12,18	155:21 181:1	178:16 179:20	54:10 120:23 137:6	88:6 89:1
18:16 21:16,16 22:23	exo00000710 (1)	113:14,25 116:21,24	199:22,25	180:1,18,19 181:18	foil (2) 74:25 136:17	91:7,11,15,20
44:17 93:9,10,14	114:22	117:9 118:14 121:6	feels (1) 45:4	182:24 184:19 185:16	folded (1) 58:25	92:5,18,20,22
99:25 100:1 104:1	exo00001315 (1)	141:5 161:19 162:15	feet (1) 173:4	191:14,15,17 192:19	follow (24) 10:2 13:6,21	93:10,12 95:13
139:4,4 160:14	190:10	183:7 185:16 192:7	felt (7) 23:24 49:15	193:5,19	16:17 20:21 24:7 39:6	96:3,15,18 97:15
161:19,20 162:19	exo00001461 (1) 191:9	193:5,7	126:4 192:6,22	195:10,11,15,22	46:12 63:11 67:18	98:11,16 99:9,20
etalbond (2) 53:23	exova (14) 110:23	externally (2) 51:2	193:4,7	firebreak (14)	86:16 87:23 93:19	100:2,13 101:8 102:4
54:12	112:1,8,16 122:3	78:10	ferrier (24) 33:13 48:25	187:1,5,10,23	104:3 118:11 121:10	103:19,22,24 135:2
etc (4) 3:16 17:17 34:8	172:1 190:17	extra (1) 172:8	49:19,24 50:20,23,25	188:1,3,7,11,22	135:22 136:4 147:2	further (20) 8:7
92:12	191:14,21,22	extract (1) 160:11	51:10,20,25	189:22 190:2	154:5 167:22 191:16	40:21,22 41:8 43:5
euro (9) 11:2,4 80:19	192:1,4,10 194:3	extremely (1) 198:19	52:6,9,10,14,25	196:10,14,20	192:19 193:19	51:25 62:3 77:21 92:1
81:6,10 83:10 85:8,10	exovas (2) 115:15,18	eye (1) 174:13	58:2,10,18 59:17	firebreaks (7) 105:20	followed (1) 62:3	93:20 109:9 110:3
89:17	expand (1) 115:3		60:22 62:13 63:4	106:15,24 107:4	following (10) 22:18	114:5,7 123:25 130:20
european (2) 18:22 19:3	expanse (1) 41:22		87:16 190:8	111:12 112:12 190:11	27:2 69:19 83:20	131:9 185:18 194:23
even (20) 17:19 28:23	expect (30) 12:2		few (8) 41:20 90:5	fireretardant (1) 12:24	92:11 111:5 141:9	200:15
34:22 61:12 75:23	17:21,22,23 33:24		117:25 131:15 190:13	firestop (2) 189:24	144:23 168:23 196:7	future (2) 92:24 98:6
81:15 103:20 109:9,16	34:9,19 81:9 92:19		196:8 199:12 200:9	190:4	follows (3) 68:6 136:15	fyi (2) 80:6 89:24
111:6,11 112:13,21	108:20,23 109:8		ffi (1) 189:4	first (40) 6:18 8:25 14:4	155:4	
113:23 117:22 129:16	119:19 124:9,9,11		fibre (6) 173:15,19	28:19 29:12,18 33:7	foot (2) 122:4,10	
136:25 138:24 167:6	146:1 156:11 185:8		174:11,18 175:14	39:22 42:6 45:4 49:4	fordham (1) 78:1	
193:13	186:20 195:23		179:11	64:16 67:8 70:1 71:8	fordhams (1) 78:25	gained (1) 36:8
event (2) 28:23 181:4	197:20,23,25		fifth (2) 11:11 155:13	74:7,23 88:15 95:10	foreseeable (1) 200:21	gap (2) 168:24 169:18
eventually (3) 4:6 81:22	198:3,7,19,24 199:1		figure (3) 9:20,25 12:20	103:20 129:6,25	forgive (2) 180:25	gaps (1) 35:5
114:2	201:3		figures (4) 68:5,19,22	130:21,22 133:21	181:11	gathered (1) 177:24
eventuated (1) 80:8	expected (3) 40:8		77:14	142:14 149:10 152:7	form (5) 13:2 107:22	gave (3) 88:5,24 125:16
ever (29) 10:23 11:8	155:18 164:13		file (2) 135:5,6	153:4 156:10 157:15	141:22 142:21,23	general (13) 4:11 6:25
12:3,6 13:24 18:8	expecting (1) 185:4		filed (1) 196:5	158:13 166:18	formally (1) 198:13	11:11 12:2 38:19 50:8
21:24 22:3 45:14	expensive (1) 67:15		files (1) 170:16	168:19,21 179:8	formed (2) 74:14 86:18	71:10 73:7 134:18
53:14 56:20 71:4	experience (13) 11:8		fill (1) 148:20	181:10 195:11	forms (1) 71:15	142:9,17 174:4 176:1
72:17 73:11,21	14:8 20:1 36:9 46:9		filling (1) 39:1	197:10,22	forward (15) 28:15	generally (6) 11:22
76:1,4,21 94:15 102:8	111:18 124:18 128:4		final (2) 44:20 193:25	fit (3) 92:18 100:24	29:23 31:24 32:6	37:25 38:1 99:10
132:18 150:3 153:4	155:16 190:6,8 198:20		financial (2) 69:9	168:19	40:11 42:20,21,25	168:1 188:3
154:5 159:23	199:5		148:22	fitted (3) 24:24 41:6	69:13 97:21 103:2	generate (1) 68:8
171:15,20,22 192:14	experienced (1) 14:7		find (13) 22:18 47:21	169:6	108:21 112:16 164:14	gents (1) 195:8
every (11) 85:20	experiences (1) 87:12		90:17 93:24 101:7	fitting (1) 77:21	191:8	get (41) 2:13 33:9
102:16,17 106:17	expertise (4) 106:23		114:21 131:9 164:4	five (2) 43:24 56:1	forwarded (3) 2:22 3:15	47:12,15 52:14 65:1
119:8,10,12,20 125:22	107:3 118:19 155:15		165:15 167:10 174:24	fix (3) 24:24 69:25 71:2	138:7	80:13 82:9 85:18 86:2
129:14 183:9	explain (13) 58:20 95:8		175:18 184:19	fixed (6) 27:3 28:3 66:2	forwarding (1) 195:1	89:1 90:15 91:20
everybody (4) 30:13	97:18 102:14,15		finding (1) 179:15	72:4,10 194:17	forwards (3) 76:25	92:21 93:12,25 94:8
70:17 125:4 126:20	112:11 149:8,10		findings (2) 71:9,19	fixing (7) 9:22 17:15	125:5 164:16	95:23 98:5 99:20
everybodys (1) 32:3	152:18,22 165:17,22		fine (1) 201:23	24:17,18 35:5 39:17	found (4) 117:1 148:24	100:22 102:8 108:25
everyone (1) 1:3	177:13		finger (1) 128:23	72:15	177:18 199:7	114:23 122:21,22
everything (3) 6:8 91:2	explained (2) 18:4		fingers (2) 139:12 168:8	fixings (10) 24:23 28:3	four (16) 98:19 99:1	125:15 126:1 156:20
101:1	95:11		finish (5) 15:2,9	41:3 65:16 72:11,13	100:3 112:14,19	160:7 161:2,25 163:11
evidence (21) 1:5 14:4	explaining (1) 176:3		200:20,24 201:1	73:1,13 174:11,18	162:21 163:1 166:7	187:15 196:8,20
17:11 18:8 51:6	explains (2) 89:14		finished (4) 1:18 111:21	flagged (1) 132:3	167:1,4,7 168:4	197:10,11,21 201:5,13
64:1,20 79:14 127:4	170:24		161:23 193:9	flame (7) 8:3,5 15:12	175:21 177:9 180:3,16	gets (1) 82:21
140:25 149:7	explanation (2) 135:19		finishes (3) 48:5,5,12	158:7,9 166:13 182:8	fourth (1) 56:3	getting (7) 3:19 18:16
150:16,22 157:14	150:13		fire (119) 7:7,8 8:13	flanged (1) 12:19	fr (3) 12:24 14:6 165:23	52:11 84:8 93:1
168:10 172:12 175:6	exploration (1) 84:5		9:4,9 10:21,24 11:3	flat (9) 11:8 29:5 41:22	fr5000 (18) 61:18,25	103:21 196:4
178:8 182:14 200:9	explore (6) 29:10 32:9		13:2,15,22	58:25 104:15,15	74:11,25 75:10,14,17	gibson (9) 103:7 105:9
201:19	61:23 93:18 173:10		14:20,24,25 15:2,8,10	117:22 122:15,15	76:21 85:9 86:8 115:9	157:25 168:12
ewi (1) 104:6	190:13		16:2,23 17:9,11	flesh (1) 66:1	133:11 146:25	169:14,23 170:6,21
ex (1) 181:3	explored (5) 27:24 59:3		20:8,16,22 21:21,25	floor (10) 106:18 167:7	147:4,22 150:4 151:18	171:11
exact (2) 178:13 179:15	92:4 113:6 198:8		22:4,24 31:4,21 36:22	183:9	156:18	gibsons (1) 171:14
exactly (8) 14:12 36:5	exploring (1) 28:1		37:3,14 38:12,16,17	189:4,12,13,14,15,15,20	frankly (1) 179:17	give (28) 14:4 27:15
46:11,20 54:16 59:4	exposed (2) 12:22		40:7,9 44:3 55:9,23	floors (24) 112:19 148:8	free (1) 98:6	36:14,25 37:7,8 39:3
91:2 197:5	122:14		56:4,10 57:13,19	161:18 162:19,22	french (3) 1:20 2:22 5:4	45:11 47:15,24 62:10
examine (2) 119:3	express (1) 68:1		67:20 70:8,23,25	163:1 167:1,4,7,10	front (2) 155:25 179:24	86:11,11 88:18 100:14
164:20	expressed (4) 98:23		71:11 72:12	168:5 175:21 176:7	full (7) 25:3 36:25	112:11 150:22 165:2
example (8) 65:15	162:16 182:19 193:23		73:1,4,7,13 80:20,24	177:9 178:17,17,18	37:7,8 99:7 126:24	169:11 170:6 171:17
108:14 139:7,8 176:8	expression (4) 73:4		81:18 82:15 83:10	180:3,10,16,23,23	132:7	172:8 196:7
183:18 197:15,16	100:14 188:14,16		85:8,10,14 86:17 87:4	182:11 183:15	fullwidth (1) 54:7	198:1,7,25 200:8,10
examples (2) 40:21 41:7	extend (1) 85:12		89:18 90:22 99:7	flue (1) 169:1	fully (16) 13:9 80:25	given (34) 4:17 6:4 7:25
except (1) 183:8	extended (1) 17:25		105:23 106:21 109:11	flush (1) 169:5	89:2 91:17,23 108:17	11:17,25 18:9 19:1,12
excess (1) 35:25	extent (10) 44:6 45:14		112:8,16,25 117:2,21	foam (2) 151:22 154:14	111:15,16,21 113:5,6	32:13 46:15 57:14
exchange (5) 82:5	57:23 85:5 100:12		120:21 122:14,15	focus (8) 7:20 30:17	119:9,12,13 122:14	67:20 71:16 85:6
112:22 116:5,7 118:2	106:14,24 107:3		130:4 131:18 154:13	75:8 100:11 131:1	156:7	88:14 92:17 99:5
exchanged (1) 187:15	123:20 133:1		159:22	138:8 177:15,15	funding (53) 62:4,5	102:12,21 118:11
exercise (4) 18:20 51:7	external (30) 32:21		160:7,19,21,22,23,23	focused (6) 36:10 130:8	77:1 79:15,18 80:2,11	119:18 124:4 133:24
						138:17 139:18 142:20

171:5 175:15 183:21	128:13,16 132:18	har00003952 (1) 186:24	133:22 134:16 135:17	102:15,18 111:6	48:17	101:8,16 102:9
184:8 189:9 192:3	133:2,12 138:3 141:1	har00005834 (2) 92:7	145:5 146:9 151:16	114:1,13 116:4,4	info (2) 3:14 196:6	104:13,19 115:1,3
193:3 195:14	147:23 152:10 154:1	94:10	158:14,21 165:8	118:16 119:14 125:8	informally (1) 198:13	117:18 118:5,13
gives (3) 68:7 134:22	160:5 162:16 171:1,16	har00017738 (1) 184:15	172:6,7 178:9 179:21	126:18 130:17,21	information (43) 4:17	120:19,23 121:5
156:9	183:23 190:21 196:3	hard (2) 90:17 100:6	181:2,25 185:15 186:5	140:20 143:25 147:12	6:4 11:16,25 22:18	122:20 124:1,5
giving (3) 68:9 69:1	199:6,7	hardest (2) 68:9 69:1	191:5 196:14	152:2 157:18 162:17	23:2 28:19 33:25	129:22,25 133:11
181:3	grey (1) 15:9	harley (72) 3:1 5:5 18:8	herself (1) 90:24	172:3 173:1,5 178:15	36:15 37:1,8 39:4	135:12,18 136:15
glad (2) 66:1 173:5	greengreen (1) 14:22	19:2,14,25 20:1 22:10	hes (6) 100:6 137:12	179:7 180:11,12	70:13 72:18	138:21 139:20,23
glass (9) 173:15,19,25	grips (1) 196:9	46:15 47:2,7,13 48:18	138:7 185:17,18 194:1	189:25 193:14 194:6	78:3,3,12,13,15 79:4,5	146:24 147:3,22,25
174:11,18 175:14	ground (1) 121:5	50:11 51:24 52:4,14	hi (11) 4:1 22:17 41:14	196:8 199:22 201:6	81:2 82:23 103:17	151:8,12 152:18 154:7
176:24 177:21 179:11	group (1) 95:21	53:15 56:18 59:23	45:2 82:22 92:10	107:22 109:16,19	107:22 109:16,19	155:6 168:17,19,25
goes (16) 12:16,17 54:1	guarantee (7) 83:7,7	60:19 68:20 70:10,16	97:25 113:18 134:9	118:17 122:17	118:17 122:17	169:5,13,19 184:22
56:18 72:1 88:20	88:16 95:12,16,19	75:21 76:21 77:8,20	190:20 191:12	123:13,19 129:5 131:9	123:13,19 129:5 131:9	186:10 190:17
91:17 105:20 113:16	98:3	83:22 84:1,2,3,10	high (2) 71:22 72:3	132:9 139:13	132:9 139:13	196:10,15,21
119:7 143:19 159:20	guarantees (2) 22:15	86:12,19,21 87:13,23	higher (1) 114:8	141:12,13 144:25	141:12,13 144:25	integrity (3) 184:21
168:20 169:2 170:24	83:5	93:23 94:1,2,21	highlevel (1) 130:12	145:4,10 171:18 185:2	145:4,10 171:18 185:2	186:10 190:16
193:11	guess (3) 5:8,9 79:7	95:9,11 97:3 105:15	highlights (1) 179:2	196:6	196:6	intend (2) 45:11 143:23
going (50) 1:4 4:24	guidance (7) 16:25	107:7 112:3 134:25	highly (2) 80:25 197:23	important (7) 11:13	informed (1) 116:8	intended (2) 17:14
10:11 12:7,8 23:7 24:6	17:18 18:2 118:13	135:22 139:7 140:3,16	highprofile (1) 40:19	79:18 81:16,24 82:25	infowarranties (2)	32:24
31:11,12 32:13 35:19	121:3,7 181:22	143:12 145:11,11	highrise (4) 50:6 80:21	87:4 182:23	33:12,15	intending (2) 23:22
38:20,24 39:2 44:20	guide (7) 74:21	146:18 147:2	81:19 89:19	impossible (2) 93:15,17	inhouse (1) 107:3	157:6
52:11 59:10 61:6 67:4	174:11,18 177:23	148:3,17,22 150:3	himself (2) 23:25	impressed (1) 49:13	initial (5) 28:2 52:9	intent (6) 100:20
68:25 75:3 83:18 86:5	196:10,15,21	157:8 164:23	185:14	impression (2) 125:15	113:19,20 165:2	140:16,25 143:22
89:9 99:24 100:4,10		165:15,16 184:17	hindsight (3) 85:22	156:9	initially (4) 51:21 53:22	144:21 146:19
101:1 105:1 112:16,23		185:7,14 191:11	133:7 137:5	improvement (3)	66:3 195:16	intention (5) 23:23
115:14 116:11 125:8		194:25 195:7	historically (1) 71:11	101:24 102:5,21	injunction (1) 63:25	30:12 141:3,20 168:18
130:10 132:13,14	h11 (1) 176:10	harleys (45) 5:17 19:19	hoban (2) 195:3 199:8	inappropriate (1)	input (4) 70:10	interchangeable (2)
147:18,21 150:22	h40 (5) 173:15,19	20:12 23:16 45:17,21	holders (2) 11:16,24	130:11	126:13,14 185:8	188:9 190:3
152:2,18 154:1 163:17	174:24 175:14,17	49:7,12 50:22 51:18	holiday (1) 28:25	incident (1) 56:11	inq00011211 (1) 142:12	interest (1) 96:1
172:3 173:1 178:6	h92 (11) 74:9 146:24	53:3,5,7 78:7 79:8	honest (1) 126:23	inclination (2)	inq000112112 (1) 143:2	interested (10)
179:25 180:8 193:24	167:21,25	81:22 82:8 83:17	hope (10) 19:9,10 22:25	125:19,21	inq000112118 (1) 144:1	30:24,24 34:16 37:3,4
goldcoloured (1) 15:1	175:3,5,13,16 176:25	84:6,17,19 86:25 88:7	39:13 89:10 98:1	include (6) 33:12 36:21	inquest (1) 168:24	41:24 44:20
gone (7) 64:25 65:1	177:19 178:14	94:8 95:1 106:6,9	201:1,3,8,12	43:18 78:13 80:23	inquiry (4) 1:14 164:21	119:2,4,20
90:8 113:7 150:12	h92776 (2) 115:4	113:20,21 122:2 124:9	horizontal (8) 54:7	118:23	200:9 203:4	interests (1) 32:4
191:22 192:4	147:23	125:3 132:23	106:15,24 107:4	included (9) 1:21	insight (2) 7:25 150:15	internally (2) 51:2 77:22
good (18)	hadnt (18) 14:7,7 40:7	134:13,21 135:5	184:20 187:2 189:7,11	33:20,25 44:6 50:22	insofar (1) 142:5	international (1) 61:10
1:3,8,9,12,16,17 35:25	44:14 57:14 62:7	150:17 151:5	house (10) 55:23,25	86:25 94:6 154:18	inspect (2) 57:20 197:6	internationally (1) 4:24
39:14,16 63:23	86:16 113:5 114:3	164:11,14 165:7,10	57:11,19 157:12 158:8	184:10	inspected (3) 196:16,24	interpret (4) 132:10
64:5,11 66:1 89:10	116:21,23 117:2,11	190:6,9 196:4	161:8,9 168:24 180:21	includes (2) 4:5 6:18	197:12	180:10 198:16,23
92:23 93:25 94:4	118:7 152:20 153:9			including (10) 20:12	inspection (4) 56:15	interpretation (3)
125:11	186:17 193:8			22:14,24 91:6	142:2 196:12 197:3	109:15 110:16 121:25
goods (3) 144:2,4,8	hairs (3) 55:6,8,12	3:12 33:18 45:1 46:6	however (3) 154:17	101:8,18 107:8 130:18	install (2) 168:18	interpretations (1)
governing (1) 31:17	half (2) 91:12 148:14	47:1,5 92:9,16 94:7,11	hr (2) 22:14,16	177:19 183:5	196:11	108:22
government (1) 198:17	halfway (4) 7:5 28:19	95:9 96:8 165:21	huge (1) 125:17	inclusion (1) 84:8	installation (8) 11:15,23	interpreted (1) 186:3
grade (1) 12:24	35:2 45:6	78:18 97:17 118:19	hughes (4) 149:18	inclusions (4) 83:22	51:18,24 138:20	interpreting (1) 16:5
grant (17) 79:18 83:23	hand (3) 97:14 122:17	153:16	150:12,21 151:16	84:1 86:12,19	156:22 196:22 199:3	into (16) 6:5 7:25 34:22
84:11,12,20 86:9 87:3	123:13	having (16) 7:9 9:10	hybrid (1) 65:21	incorporate (1) 95:15	installed (8) 17:23	38:25 40:2 57:22
91:7,11,20	hands (1) 128:6	15:17,23 42:6 45:3	hypothetical (1) 155:21	incorporated (3) 142:4	59:18 67:5 111:14	70:10 76:2 81:21
92:18,20,22 93:10,12	hang (1) 192:10	58:24 90:5 94:12		145:20 181:14	147:24 153:3 171:2	100:9 126:7 128:18
99:20 100:1	hanson (1) 199:8	119:11 123:18 154:5		incorporating (1) 20:16	196:16	132:14 168:10 178:13
grc (26) 161:12	happen (2) 12:7,8	163:5 168:23 177:4	ibi (3) 26:7 40:23 65:11	incorrect (1) 187:14	installers (3) 11:14	185:8
162:4,8,8	happened (5) 10:12	195:14	id (5) 2:6 3:17 98:4	incorrectly (1) 170:15	92:12 94:17	introduced (1) 60:10
163:6,13,18,22,24	12:4 130:11 162:20		167:10 181:6	independently (1)	instance (1) 196:19	introduction (7)
167:5,5,11 168:7	180:22	head (1) 196:4	idea (2) 37:16 139:24	158:21	instructed (1) 101:23	17:8,16 24:25 26:24
173:22,23,25	happening (1) 152:22	heading (2) 14:19 24:12	ideally (1) 104:6	index (2) 94:24	instructing (2) 112:8,25	60:15 130:9,14
174:10,17 175:23	happens (1) 200:21	hear (1) 1:4	identical (1) 68:22	132:14	instruction (1) 86:11	introduction (1) 130:14
177:15 178:3,4,23	happily (1) 45:8	138:12,14 160:19	identified (5) 41:5	index (2) 15:10 203:2	instructions (2)	intumescent (2) 54:8,9
179:5,10 180:7	happy (6) 45:13 59:10	hearing (2) 1:4 202:5	71:21,25 115:8 138:2	indicate (2) 88:21 97:17	11:16,25	invariably (1) 122:13
grca (6) 162:6	96:20 192:21 193:6	heating (1) 104:1	identify (1) 43:12	indicated (1) 168:18	insulants (1) 154:14	investigate (7) 12:6
174:9,16,23 175:18	196:9	height (4) 35:8	ie (4) 54:4 69:22 161:19	indicating (1) 168:15	insulated (3) 83:1 91:14	45:14 64:14 86:21
177:17	har00000120 (2) 140:17	130:3,19,25	198:22	individual (2) 129:1	104:17	88:2 100:2 102:23
great (2) 40:2 66:7	144:22	help (11) 16:4 33:3	ill (6) 3:2 21:9 69:18	183:16	insulating (1) 151:10	investigated (2) 83:17
greater (1) 182:12	har000001201 (1)	38:22 45:13 52:13,14	134:1,15 180:25	induction (1) 24:8	insulation (86) 17:16	154:6
greatest (1) 42:17	140:23	72:25 96:4 101:15	im (72) 3:19 4:13 16:22	industry (3) 188:7	37:18 59:18 60:23	investigating (1) 79:21
green (3) 74:21 92:11	har000001202 (1)	165:16 200:5	18:1 20:9 25:6	190:3 198:21	61:1,10,17 62:12	investigation (2) 57:22
94:17	141:17	helpful (1) 92:19	35:17,19 37:7,25	inert (3) 170:1 171:2,16	63:13 74:10,21 75:16	123:25
grenfell (44) 3:24 22:12	har000001204 (1)	here (42) 14:19 29:10	43:3,22 44:5	inertness (1) 171:23	76:14,17	investigations (1) 155:6
26:25 37:24 38:15	140:17	42:16 43:23 44:15	45:8,12,22 46:9	inference (1) 125:20	77:16,17,18,22 78:9	involve (2) 4:18 8:7
41:12,23 50:7,7 51:1	har00000396 (1) 145:5	54:11 67:3,9 71:25	47:20,25 48:8,13	inferior (6) 29:23	80:19 81:17 83:8,23	involved (25) 35:11
53:15 54:5,9,16,23	har00000934 (2) 2:1	79:23 83:19 85:7	50:10 53:4,13 65:21	30:1,19,19 31:15	84:11 85:4,5 86:7 87:5	50:25 52:4,9,19 53:2
58:22 59:22 61:17	6:16	87:8,25 93:6,21 95:7	66:1 68:9 69:1 73:2	37:12	88:12,25 89:17 90:22	57:11 64:22
62:15 69:16 74:12	har000009343 (1) 9:20	98:24 99:3 106:20	75:2,12 83:18	inferiority (1) 31:17	91:11 93:6 94:7 95:15	70:12,15,16,20 75:24
75:6,11,22 101:17	har000009345 (1) 14:18	107:15 109:18 131:9	84:8,13,25	inferring (2) 45:22	96:14,18,20 99:14	76:20 78:16 104:1
	har00003616 (1) 106:7		86:22,23,24,25 93:5			

126:1,11 133:5 149:6 155:20 173:12 190:9,12,14 involvement (7) 52:21 97:12 152:10 182:22 183:10,17 198:12 involves (1) 51:14 involving (3) 50:6 133:15 162:13 ipswich (1) 136:21 irrespective (1) 122:20 isnt (9) 31:14 54:23 56:1 104:17 117:23 122:16 164:5 175:17 194:11 issued (4) 5:16 131:19 152:6,7 issues (4) 7:18 27:23 34:19 44:2 item (8) 24:11 29:3 71:22 77:11 96:10,12 121:22 179:8 items (4) 4:14 35:21 76:10 168:21 itll (1) 196:8 its (93) 1:21,25 4:24 6:10,11 8:3 13:9,12,22 16:19 19:25 21:6 30:15,15 31:13,14 32:12 35:2,9 38:5 39:1 42:15 48:12 54:15,23 55:6 56:11,12 59:4,4 62:14 71:7 72:2,16 73:8 75:15 84:13,25 85:7,14,24,24 86:23,24 90:2,16 101:4,13,16 103:11 104:22 114:14 115:10 117:15 118:1 119:12 121:14 126:19 129:13 135:17 140:25 142:3,4,16 145:8 150:17 153:24 154:2 156:4,7 159:16 162:4 165:4 166:6 168:11 173:12 175:13,15,22 176:12 177:25 179:16 180:18 185:22,22 188:9,14 189:19 193:24 194:5 198:9 199:24 200:2 itself (7) 1:25 19:24 31:25 91:15 100:17 140:24 184:3 ive (41) 2:5 18:4 26:10 33:9 34:5 35:21 37:16 46:10 56:20 59:2 62:16 64:20 65:19 75:17 85:15 88:15 89:2 92:12 113:13 114:13 117:1,4 119:10 122:25 124:25 131:6,25 138:7,14 146:16 152:13 153:12 159:21 164:19 165:25 182:4 187:20 189:9 192:18 193:23 194:17	jct (2) 141:22 142:25 job (5) 39:14 52:15 126:19 166:21 186:18 jobs (2) 7:15 14:9 john (2) 195:3 199:8 joints (2) 17:15 65:18 jon (1) 151:11 july (7) 1:1 97:21 99:13,23 101:4,5 202:6 jump (2) 53:13 65:16 jumped (2) 7:18 155:23 junction (1) 183:7 junctions (2) 44:17 183:3 june (22) 60:8,16 61:16 69:13 79:17 80:1,5,16 82:19 83:21 89:7,9,22 90:20 91:14 92:2,9 95:5,6,8 96:7 148:4 justification (1) 66:8 <div>K</div> k15 (14) 138:12 139:8 148:2,3,17 149:5,6 150:5 151:14,17 152:5 154:7,21 156:22 kalc (4) 37:11,15,23 38:14 kctmo (2) 32:21 66:3 keen (2) 23:25 24:1 keep (6) 59:10 96:2,4 164:15 165:11 178:6 keeping (2) 116:8 129:1 kensington (1) 141:19 kept (1) 112:17 kevin (3) 184:15 191:9,12 key (2) 7:5 9:7 kin00016733 (2) 152:4 156:4 kin000167332 (1) 153:18 kin000167334 (1) 154:11 kind (4) 36:5 85:4 111:10 131:16 kinds (2) 144:7,10 kingspan (13) 138:22 139:8 148:3,16 149:20 150:5 151:5,7,11,22 152:5 154:21 156:22 kingspans (1) 138:12 kme (1) 22:19 knew (21) 8:9,10 25:5 60:2,5 61:8,16 82:13 93:15 112:4 137:23 139:10,11 148:25 150:19 160:18,19,21,22 192:24,25 know (148) 2:8 6:7,11 8:17,21 11:22 13:12,16 14:15 21:15 26:14,16 27:18 31:3,11 34:15 36:12,16 37:16,17 40:5 42:20 44:16,18 46:4,24 47:1 48:9,13 52:18,19 53:2 54:23 55:11 58:23 59:3,21 62:24 63:9 64:20,21 65:18 73:15,18	78:7,16 81:17 82:14 84:17 85:22 86:20,23 88:1,1 90:14,15,16 92:25 93:11,17 94:14 97:12,16 98:15,25 100:8 103:1 107:6 115:10,11 118:7,21 123:17 125:1,9 132:13,22 134:2 135:13,14 136:22 137:18,22 138:6,21,22 139:3,9,22 140:1,8 142:16,17 147:13,14,22,24 148:1,6,8,10,16 149:6,9,11,19 150:2,6 151:13,20,22 152:15,16,20 157:10 158:6,7,10,18,19,24 159:6,11 160:20,22 162:9 163:3,15 164:8,12 165:25 167:15 180:17,21,23 186:16 187:15 188:12,15,16 189:15 192:2,12,14,16 193:24 198:21 200:6 knowing (9) 10:12 33:21 85:22 105:1 115:21 130:11 133:7 149:21 192:1 knowledge (17) 14:12 17:25 19:10,11 32:4 50:11 52:13 63:17 72:17 75:10,13 115:11 124:11 132:17,23 150:3,8 known (9) 46:2 85:16 137:23 147:12 151:24 157:1 177:21,22 200:6 knows (1) 92:20 kootherm (9) 138:12 139:8 148:3,17 149:5 150:5 152:5 154:21 156:22 <div>L</div> labc (4) 152:2,4 155:22,25 label (1) 10:15 labour (1) 39:21 lacknall (3) 160:8,16 161:3 lacknallsic (1) 158:8 ladder (1) 42:4 lakanal (16) 157:12 160:20 161:8,9 162:1 163:12 164:7 168:24 170:14 173:2 180:15,15,17,17,21 199:25 lakanaltype (1) 169:12 lamb (5) 184:15 185:9,14 186:14 191:9 lambda (1) 129:23 landed (1) 196:3 language (3) 34:17 175:25 176:1 lapse (1) 149:21 large (2) 41:17 85:18 last (14) 15:21 19:19 31:11,12,12 41:24 105:4 117:15 130:22	131:15 143:3 174:7 198:6 200:9 later (12) 47:18 51:5 65:23 67:25 71:1 74:3 92:8 114:6 118:1 123:24 168:19 193:16 latest (1) 135:6 lawrence (43) 1:5,6,7,8,16 9:18 19:22 24:21 39:8 41:15 49:2 51:6 63:24 64:9,13 77:13 79:17 81:23 83:20 98:7 119:14 125:14 127:14,18 145:6 151:3 157:19 165:21 168:15 169:10,25 171:3 172:10,23 173:1,10 175:24 179:21 180:25 194:24 200:18 201:4 203:3 lawrences (1) 200:19 lead (12) 10:19 34:9,11,19 108:23 109:7 127:20,21,24 128:10 139:22 184:12 learn (1) 169:6 learned (1) 190:8 least (18) 18:3 28:5 36:19 47:23 49:7 83:11 102:22 134:23 139:19 165:2,22 181:10 182:6,18 186:8 196:19 197:8 201:7 leave (1) 168:9 leaving (4) 147:15 148:21 149:18 171:14 led (1) 42:7 left (6) 26:23 144:2 148:14 149:16 150:10 174:14 lefthand (5) 68:25 114:25 134:7 173:7 187:22 legal (1) 144:19 length (1) 144:18 lengthy (1) 199:14 less (2) 65:21 109:5 let (14) 10:8 45:24 58:2 65:1 73:4 78:14 85:1 109:17 119:24 127:18 153:15 168:10 171:20 178:6 lets (33) 6:16 9:20 11:6 17:3 28:14 29:2 32:18 50:9 56:21 76:6 80:13 95:3,4 101:12 106:7 108:25 114:6,21 129:19 130:13 131:8,15 133:14 142:11 143:2 144:1 145:4 146:4 152:3 160:2 182:5 184:14 186:22 letter (6) 140:15,22,25 143:21 144:21 146:19 level (4) 106:18 121:5 190:25 191:18 life (2) 29:7 35:25 lifespans (1) 23:6 light (4) 20:4 41:5 184:14 185:6 lightweight (2) 83:9	88:17 like (39) 3:7 9:16,18 17:10 27:2 36:5 47:12 49:5 50:4 53:20 74:8 98:4,25 99:13 100:2 101:13 103:2,14 112:5 117:5 127:7 129:12 132:6 137:3 150:24 151:9,9 152:1 160:10 163:14 168:13 181:6,23 191:23 192:4,11 197:15 200:25 201:22 liked (1) 49:14 likeforlike (8) 56:8 61:11 84:14,18,25 85:3,12 151:18 likely (4) 49:15 66:19 69:5 197:24 limit (1) 150:17 limited (13) 7:14 30:22 31:18 113:21 118:14 121:7,13 140:16 154:15,22 166:25 167:3 180:16 limiting (1) 180:2 line (21) 6:7,7 54:2 56:3 68:6 69:23 76:12 96:4 134:7 155:13 168:10 183:15 189:4,8,11,13,14,18,18,20 190:24 linear (1) 154:25 lines (4) 131:16 166:7 179:15 187:2 list (3) 56:16 76:12 179:8 listed (2) 35:21 131:20 literature (1) 50:13 little (19) 7:25 12:11 21:7 28:15 34:4 47:18 49:2 64:14 67:24 68:18 71:1 79:24 95:3 103:2 114:4,5,7,8 198:9 load (2) 176:12,21 local (3) 51:8,9 105:23 located (1) 170:16 location (1) 196:7 locations (1) 120:21 london (1) 22:12 long (13) 17:7 32:12 35:2 64:25 65:23 69:17 153:23 163:19 164:17,20 166:6 181:23 187:2 longer (2) 43:24 178:7 longevity (1) 30:3 longterm (1) 40:18 look (111) 1:25 2:1 3:9,21 4:11 6:16 9:16,24 11:6,10 15:7 17:5,10 29:2,12 30:18 32:18 35:19 38:2,4 40:21 45:25 47:22 49:2,5 50:12 53:20 55:18 56:10,12 60:6 65:8,25 68:15 69:6 71:7,20 74:9 75:20 79:16 80:15,16,17 82:17 89:5 92:8 95:1,4 101:2,12 102:14,16 103:5,9,14 106:7	108:24 114:25 115:13 121:17,21 128:18 129:6,19 130:10,12 131:8,11,15,15 133:14,16,19,21 134:6 135:10 138:19 140:15 143:2,3 144:1 145:5 146:5,8 150:21,24 151:25 152:3 153:18 154:11 157:15 160:2 166:3,4 167:10,20 168:13 173:2 174:4 175:11 176:5 181:13,24 182:5 183:2 184:14 186:14,23,24 187:9 194:7 looked (15) 9:8 21:6 24:10 41:21 67:13 78:23 100:9 110:5 118:22 140:5 174:24 175:5 178:8 181:8 199:23 looking (42) 1:19 6:1 8:24 9:24 21:14 28:4 43:9,10 45:10 50:21,25 52:1 63:2 74:18 78:25 84:4,4 87:25 92:15 93:2 99:13 103:21,24 105:16 112:15 113:1 120:14 121:23 126:7 131:13 142:14 149:14 157:24 158:4 163:16 164:25 167:14 174:13 181:22 187:17 190:10 196:13 looks (6) 3:7 66:18 101:15 137:9 160:10 175:24 lot (16) 14:20 35:1,4 82:8,9 92:3,4 100:4,8,22,23 125:23,24 128:14 144:18 200:3 lots (2) 99:24 119:6 louvre (1) 32:21 love (3) 125:22 126:20,21 low (3) 7:10 129:23 191:17 lower (28) 34:4 60:9 112:19 116:20 148:8 161:18 162:2,14,19,21 163:1 167:1,4,6,7,7,12 168:4 175:21 176:2,19 177:9 178:17 179:6 180:2,9,16,22 lpa (1) 27:18 ltd (1) 94:2 ltds (1) 141:20 lunch (2) 127:1,19 lunchtime (2) 201:1,13 luxurious (2) 30:7,10 <div>M</div> m (1) 41:15 maddison (1) 157:25 main (3) 39:16 88:15 95:10 major (4) 39:19,25 61:9 90:3 making (9) 12:3 19:23 20:11 62:1,23 86:24 124:7 128:25 151:1	manage (3) 19:14 98:2 184:2 management (3) 51:17 128:17 141:20 manager (15) 50:21,24,24 51:13,21,21 126:10 127:23 128:12 132:5 138:15 147:7 151:15 152:17 155:16 managers (2) 128:9 153:1 managing (3) 140:4 152:25 155:20 manner (1) 41:3 manufacture (2) 174:10,17 manufactured (1) 13:1 manufacturer (8) 19:11 74:22 83:15 84:15 85:18 88:5 90:3 100:11 manufacturers (5) 17:24 18:15 20:12,20 82:9 many (3) 49:11 167:10,15 marc (7) 25:1 26:6,11,20 27:12 40:15 65:11 march (5) 152:6 184:16 190:11 195:20 196:1 marchapril (1) 171:7 marcs (1) 41:3 margin (1) 101:18 mark (19) 1:20 2:21 3:12 33:18 45:1,2 46:6 47:1,5,19 92:9,10,16 94:7,11 95:9,11 96:8 165:21 marked (1) 189:4 market (4) 49:10 61:11 102:16,16 marketed (1) 102:22 martin (39) 1:3,8,10,12 59:9 63:21,23 64:5,9,11 125:11,14 126:4,17,22,25 127:3,7,14,16 172:8,14,18,22,25 175:24 194:11,20,22 199:15,20 200:17,22,25 201:4,11,16,18 202:2 massive (1) 49:9 match (2) 95:23 170:8 matches (1) 144:20 material (38) 7:10 24:17 25:12 29:4,5,6,20 30:7,10,14 32:19 41:3 45:9,22 55:3,7 56:5,6 58:22,24 59:5 60:24 61:2,12 74:20 91:6 100:15,17 101:7 104:6 122:11 123:6 150:1 151:10,12 155:2,5 196:6 materials (17) 17:7,16 27:7,19,22 41:4 53:7 85:4 138:15 139:1,2,5 144:2,4,8 149:12 170:1 materialscolours (1)
--	---	---	--	---	--	--

27:25	middle (6) 9:7 34:25	months (1) 110:21	123:6 149:12,14 153:1	170:3 179:2 201:25	official (1) 7:1	55:21 59:18 60:23
matt (1) 157:23	104:5 170:25 186:25	moorebick (39)	178:1 193:16	notice (17) 4:5	officials (1) 198:17	61:1 62:12,24 63:4,5,6
matter (11) 17:19,21	199:13	1:3,8,10,12 59:9	necessary (5) 38:22	81:2,24,24 118:2,23	oftopic (1) 61:7	67:6 68:2 72:1,4 89:8
85:23 110:23 134:3	midseptember (1)	63:21,23 64:5,9,11	120:21 192:22 193:4,7	119:1,24 120:4 130:15	ofgem (1) 83:5	94:22 129:17 169:8,22
148:2,13 151:19	112:14	125:11,14	nedzink (1) 22:12	131:1,4 135:11 136:7	often (3) 108:21 111:19	174:3 183:2 190:13
169:10,14 194:2	might (17) 10:20 61:6	126:4,17,22,25	need (33) 17:23 20:10	142:3 145:2 170:3	187:15	201:20
matters (2) 127:4	67:10,16 72:25 85:23	127:3,7,14,16	34:1 42:15 46:22	noticeable (1) 24:22	oh (3) 109:16 112:24	overall (2) 73:7 161:15
193:21	102:20 108:17 118:5	172:8,14,18,22,25	47:13 48:10,14 65:22	noticed (7) 82:23	201:4	overengineering (1)
max (2) 78:1,25	129:15 137:20,21	175:24 194:11,20,22	66:3 77:15 78:8 92:21	117:2,4,11	ok (1) 196:3	194:12
maximise (1) 69:9	150:15 152:23 162:17	199:15,20	94:8 105:23 109:9	131:2,23,24	okay (30) 18:7,18 46:21	overlap (3) 128:15
maximum (2) 32:22,24	190:7 201:13	200:17,22,25	110:3 117:19 122:15	noticing (1) 135:23	58:1,17 61:22 70:21	149:17,23
maybe (5) 59:7 134:3	mike (1) 22:10	201:4,11,16,18 202:2	131:20 134:21 139:3,3	novated (1) 34:8	77:2 79:9 80:13 89:4	overlooked (1) 4:2
137:24 150:12 163:24	millett (27) 1:13,15	more (37) 1:4 14:15	142:18 147:4 155:21	november (3) 115:19	90:18 95:2 102:2,3	overly (1) 62:16
maynard (16) 67:25	59:6,12 63:19,22	19:10 21:7 23:9 35:6	167:9 181:1 192:10	157:17 160:4	104:21,23 108:4 117:6	overnight (1) 200:21
79:23 80:4,9,17 81:3,5	64:12,13 125:7,13	36:15,16 39:21 41:6	197:25 198:10 199:19	number (8) 27:18 71:22	119:22 123:9 129:3	oversee (1) 128:14
82:19,20 83:20 86:11	127:16,17 172:3,17	45:13 47:12,15 49:2	200:1	77:6 94:4 95:9 106:11	131:3 139:18 159:1,14	overseeing (2) 51:23
87:3 88:14 90:4 96:8	173:1 176:5 180:12	51:1 59:7 66:18 67:15	needed (19) 7:15	137:8 138:10	187:8,21 189:21	152:23
101:4	194:23 199:11,17,21	75:9 80:11 94:25	30:12,13 36:7	numbers (2) 3:20 138:1	194:22	overspeccing (1) 194:18
maynards (2) 68:17	200:15,19,23 201:2,25	100:17 111:8 121:4	42:20,21 88:2 91:7,21	numerous (1) 42:9	once (1) 24:6	overview (1) 193:25
85:14	202:1	126:6,22 130:9,13	94:18 100:18 108:3		onto (4) 138:16 139:7	owed (1) 140:9
mean (33) 7:13 8:2,6	millimetres (1) 104:18	132:12 140:6 148:20	109:10 111:12 145:12	O	156:23,25	own (8) 3:19 36:19,19
9:5 18:19 31:6,7 34:11	mind (16) 19:17	161:9 179:10 182:13	185:15,15,21 192:7	obligation (6) 19:1	open (4) 119:3,8,12,19	44:7 52:13 69:9
36:2 48:1,14,15 53:6	43:18,20 44:7 85:9	194:13,13 200:17	needs (1) 78:9	101:22 102:12,19	openfronted (1) 54:8	115:11 191:6
73:10 75:18	109:10,13 117:7	morning (16)	negative (1) 108:19	124:7 156:15	opening (2) 118:21	
84:1,10,21 93:3 117:4	159:15 164:25 168:22	1:3,8,9,16,17	negotiation (2) 40:10	obligations (4) 14:1	183:18	P
119:14 126:17	170:17 187:18	47:6,9,18 55:16 74:6	44:19	20:5 140:12 144:16	openings (4) 118:25	pa (1) 128:8
128:7,14 130:13	194:20,21 200:19	83:21 89:10 90:20	negotiations (1) 44:11	obliged (1) 18:19	181:20 183:5 189:2	pack (2) 33:11,12
135:1,17 137:11,15	mineral (10) 37:18	146:25 196:2,4	neil (28) 77:8 105:18	observations (1) 41:1	opinion (8) 27:2 35:8	package (4) 128:10
142:16 149:24 160:16	59:18,24 60:5,23 63:5	most (5) 24:19 28:10	108:7 110:10,19 111:7	obtain (2) 8:18 156:16	93:5 98:24 105:24	141:5 152:25 196:5
192:12	80:3 84:22 87:18	33:2 66:14 198:18	112:23 113:12,16	obtaining (2) 91:7	192:21 193:6 198:11	packages (1) 129:1
meaning (1) 177:14	91:21	mostly (1) 65:17	114:10,15,19 116:14	151:6	opposed (8) 23:8 43:1	pages (4) 27:10 71:17
means (1) 28:3	mini (1) 63:19	move (5) 40:11 59:12	117:16,17 120:16,17	obvious (2) 41:16	48:6 63:5,7 97:5 99:21	89:6 144:25
meant (10) 39:23 48:20	minimum (1) 96:3	103:2 180:25 195:25	121:19 122:1,5,9	182:13	188:21	paid (1) 181:17
49:10 73:1 81:11	minute (3) 59:2 170:23	moves (1) 108:21	123:12 184:16 190:15	obviously (26) 30:11	optimum (1) 93:13	paint (3) 8:14 48:4,12
85:17 137:1 155:17	199:24	moving (6) 25:17 40:22	191:9 192:6 195:1,4	31:5 34:15 43:3,4 66:2	option (11) 24:6	pair (1) 128:6
180:6 188:3	minutebyminute (1)	41:8 69:13 97:21	neither (2) 112:2	75:23 82:10 89:2 93:8	46:4,14 66:15 67:16	panel (12) 3:24 6:12
meet (7) 26:9 130:1	193:17	191:8	125:18	96:2 124:25 125:21	68:8 88:5 95:17	10:16 13:17 29:5
154:15,22 158:2 159:3	minutes (19) 28:16,18	ms (3) 29:14 159:10	never (10) 24:5 46:10	126:9 128:15 131:25	100:13,25 112:10	37:17,22 41:23 51:15
183:23	59:7,10 77:5 82:20	175:25	102:23 113:13,24	132:3 142:24 143:18	options (12) 23:15	54:20,21 89:1
meeting (38) 24:9	117:25 125:9	much (22) 6:5 9:16	143:11 154:6 155:5	155:13,17,24 158:24	25:19 26:7 28:1 42:3,9	panelling (1) 158:9
26:5,11,24 27:6,21	170:8,12,15,15,18	10:11 26:1 36:14 37:8	159:15 170:18	176:18 185:2 194:13	65:18 66:6 67:8,21	panels (56) 3:5 4:10
28:16,18,22 29:17	172:9 190:16,16	38:25 39:3 47:12	next (25) 27:10 32:8	occasions (2) 27:19	79:22 99:25	7:8,14,15,20 8:25
32:10,14,19 33:10	194:12,13 199:12	81:20 94:24 127:7	37:10,11,19 38:6	112:15	order (14) 8:18 14:1	9:2,10,12,14,22 10:5,9
34:9 35:10,22 38:20	minutes60 (1) 194:13	130:20 131:5 139:6,6	41:16 67:23 68:16	occupied (1) 92:24	23:14 69:8 83:4 84:2,3	11:8 12:14,18 13:1,13
39:5,7,11,22 40:5	mirror (1) 27:4	156:6 172:14 199:18	71:17 80:15 89:6,14	occur (10) 38:14 63:1	87:3 91:20 95:13	19:3 20:7,17 21:21,25
41:12 42:2,12 43:4	misleading (2) 156:7,9	201:17,18 202:2	98:6 110:8 121:22	112:7 118:5,7	99:20 109:12 117:21	22:4 35:6,24 36:3,13
69:20 77:6 98:4,12	mistake (5) 104:21,22	multiple (1) 21:14	122:9 129:4 136:11	121:10,14 137:25	141:4	37:15,16 38:14,15
154:17 158:13	105:7,8,11	must (4) 83:5 141:8	169:2 172:4 173:17	185:13,21	ordered (7) 46:23	39:17 40:18 41:19
169:15,24 170:2,12	misunderstood (2)	144:23 146:24	175:11 181:11 190:13	occurred (1) 61:4	138:16 139:1,7	42:16 43:8,13,17
171:5	121:11,12	myself (9) 3:8 43:23	nicer (1) 67:13	occurrence (2) 158:25	148:3,10,17	44:6,13,15,16 54:24
meetings (3) 112:15,17	mix (1) 100:25	62:17 69:21 107:18	nick (2) 105:10 157:17	171:1	ordering (3) 139:22	56:4 57:7 58:14,18
168:15	mm (1) 12:15	118:18 158:18	nobody (2) 70:7 128:4	oclock (5) 127:5,10	156:21,24	62:11 63:13 95:24
members (1) 156:13	mobile (2) 27:16 93:25	179:17,18	nodded (1) 145:20	199:13 201:12 202:3	orders (2) 138:24	96:17,21 165:23,23
memory (2) 4:20 94:5	mock (1) 69:24		noncombustible (2)	oconnor (16) 57:17	143:16	paper (1) 198:25
mention (1) 98:14	mockup (2) 21:15 70:17		122:12 123:7	77:7 105:17 108:6	organisation (1) 141:20	paradigm (1) 197:16
mentioned (4) 11:7	mockups (1) 99:25		noncompliant (1) 57:8	110:12 116:8 126:9	organise (1) 24:25	paragraph (58) 5:15
79:15 118:16 157:12	model (2) 137:8 138:9		none (2) 75:12 88:20	127:25 128:7,11	original (3) 43:4 54:11	11:10 12:12 14:19
mentions (1) 163:3	modified (1) 142:1	namely (4) 56:5 62:13	noninferiority (1) 31:18	136:13 137:9 139:16	59:15	15:7,24 16:7,17 29:3
merely (1) 20:17	moment (31) 2:1 5:13	85:14 86:12	nonstraight (1) 48:7	150:10 158:20 195:1	originally (1) 115:14	32:18 34:7,25 35:2,18
message (1) 112:1	9:5,8 21:7,7 25:15	narrow (1) 193:18	nor (1) 112:3	october (8) 70:25	osgood (1) 196:1	41:25 45:6 49:5 53:20
met (6) 26:10 27:18	39:8 53:13 63:2 72:5	national (2) 61:10	normal (4) 19:6 132:6,8	71:15,21 75:22	others (17) 33:10 40:15	54:11 55:21,23 57:3,4
155:1 157:23	77:4 78:6 83:2	181:15	186:12	103:3,7,21 149:17	45:1 47:2,7 50:15,23	58:5 59:12 66:22
158:17,22	94:11,11 103:4 116:6	native (1) 101:13	normally (3) 83:24 87:8	odd (1) 9:18	65:5 77:8 80:12 97:11	69:17 73:23 80:18
metal (2) 54:7 134:9	118:22 133:15	natural (2) 45:5 70:1	164:13	odp (1) 74:20	103:7 162:14 184:17	82:22 88:15 95:10
metallc (1) 15:9	160:9,17 161:4 162:1	nature (1) 169:18	nos (2) 141:11,13	offer (1) 47:14	191:11,18 193:15	107:11 121:3
metallics (1) 4:3	163:12 164:7 172:5	nbs (21) 74:7 78:24	note (9) 9:2 10:2 17:10	offering (6) 19:21 48:9	otherwise (5) 32:5	130:21,22 140:5 143:4
method (2) 17:15 24:17	173:2 178:6 180:15	115:7,12,23	18:3 55:11 77:17,25	62:3 83:15 129:24	150:4 171:4 179:2	146:24 150:25 151:3
metre (1) 46:20	199:25	146:14,20,23 152:15	78:11 198:6	197:2	197:21	154:17 155:11 159:20
metres (12) 121:4	money (4) 24:19 47:13	160:11 167:20	noted (6) 14:8 24:21	office (1) 152:24	ought (1) 112:7	166:5,6 168:13,20
129:17 130:3,18,25	194:15,16	173:3,12,15 174:19,25	46:3,14 123:21 138:22	officer (6) 105:24	ourselves (2) 79:8 125:2	169:3,8 170:11,21,25
156:11 162:10,10	monitoring (1) 128:25	176:7 177:8,18,21	notes (6) 24:8 134:19	195:9,14,18,21,23	outside (2) 23:21	174:5 181:13,25 183:2
167:12,12,12,15	month (2) 68:18 148:14	179:15	135:12,18,25 136:6	officers (1) 72:14	200:23	189:10
mid2014 (1) 60:21	monthly (1) 168:14	necessarily (10)	nothing (5) 43:25 168:4	offices (1) 142:3	over (24) 27:19 39:17	paragraphs (1) 41:20
		78:20,21 111:7 122:12				

part (52) 22:22 35:17,20 43:17 64:16 69:10,10,18 71:15,18 74:14 75:8 77:22 83:11 84:2,3 85:20 86:19 87:5,6 104:17 122:18 123:15 130:9,14,14 131:2 137:6 138:20 144:5 145:10 146:5 152:15 154:18 168:6 173:15 174:19 175:8,20 176:19,24 177:1,15,17 178:23 180:7 181:4 193:10 197:20 198:13,14 199:14	perforated (1) 54:7 perform (1) 14:1 performance (39) 8:13,19 11:3 13:3,22 17:6,8 20:8,16,22 21:21,25 22:4 31:2,4,21 36:22 37:3 38:12,16,17 40:7,9 55:9 57:6 75:2 80:25 82:16 86:17 99:7,10 101:24 102:5,21 129:24 130:4 131:18 159:22 175:9 performances (1) 16:9 performancewise (1) 61:14 perhaps (11) 21:7 65:5,20 112:25 121:2,11 125:18 126:6 168:8,9 176:3 period (3) 151:14,15,16 permission (2) 27:1 150:3 permitted (1) 118:6 persistent (1) 100:6 person (3) 57:15,17 126:22 personal (2) 128:2 184:1 personally (8) 26:10 35:11 72:17 106:23 139:19 156:21 159:23 171:15 perspective (4) 31:7 119:18 126:2 186:21 persuade (1) 67:10 peter (4) 27:13 29:15 69:14 157:25 phenolic (1) 61:1 philip (11) 26:20,23 27:12,14 29:15 69:16 157:17 160:4 165:11 166:8 169:24 photographs (1) 56:23 photos (2) 33:13 39:16 phrase (1) 6:6 physical (1) 27:22 pick (15) 5:13 9:12 13:13 78:21 81:2,15 105:10 128:7 167:21 175:4 178:25 179:7 192:9 194:4,6 picked (8) 67:16 78:20,22 91:1 114:3 177:20 178:22 193:15 picking (2) 9:7 127:18 picture (1) 41:25 pictures (1) 66:1 piece (1) 72:4 pieces (2) 194:4,6 pin (2) 130:13 134:15 pings (3) 82:21 89:21 90:19 pir (8) 61:1 62:8 63:5,13 97:5,14 129:25 151:23 pitch (5) 62:2,24 68:9 69:1 83:14 pitched (1) 104:15 place (9) 28:22,24 61:24 197:11,22 198:16,17 199:15,17 placed (2) 133:5 177:13 plain (1) 12:18	plan (3) 38:4 71:9 191:17 planners (42) 11:13 21:16 23:7,24 24:21 26:11 27:5 28:7,11 29:17 30:8,23,24 34:15,21,22,23 36:10,20 37:3,25 38:1 39:8 40:11 43:3 44:11,11,14,19 59:23 65:15 66:4,19,24 67:10 69:5,19,23,25 70:14 93:9 99:24 planning (16) 24:3 25:1 26:1,6 27:1,5 28:15 29:13 31:7 32:1 40:17 42:10 47:7 68:3,12 82:24 plant (2) 104:1,16 play (7) 24:2,3,4 47:13 48:10,15 182:23 played (2) 39:18,24 players (1) 61:10 playing (2) 47:20,25 please (80) 1:6 3:1 5:15 6:17 9:21 14:18 17:10 22:7,18 26:19 27:15 28:15 29:12 32:8 39:9 40:12 44:25 47:4 49:4 53:19 56:23 58:3 63:24 64:2,5 67:23 68:15 71:7 74:7,9 75:20 77:5,10 79:13 89:5 93:24 95:1 101:7,14 105:15 106:8,14 113:9,19 116:11,16 127:3,5,8,10 133:17 134:16 135:9 136:11 140:15 143:2 144:21 146:8 150:25 152:4 156:1 157:15 158:12 165:16 166:5 168:7,11 172:16 173:9 174:3 175:5 176:10,20 181:7,12 184:19,22 186:24 196:9 202:3 plus (1) 97:15 pm (5) 127:11,13 172:19,21 202:4 points (3) 22:20 29:18 131:6 polyester (1) 12:22 polyethylene (6) 13:14,18 54:4,13 58:12 62:11 polyisocyanurate (2) 74:20 151:23 polyurethane (2) 151:22 154:14 position (3) 6:13 69:9 112:12 possibility (1) 201:7 possible (5) 36:15 39:4 80:2 93:18 119:12 possibly (8) 42:17 55:6 57:17 79:8 88:11 116:6 138:21 171:7 post (4) 117:2 147:15 181:3 182:4 postdated (1) 90:4 postfire (1) 57:11 postmeeting (2) 77:25	78:11 potential (3) 24:14 25:2 70:8 potentially (1) 115:16 powder (3) 37:11,14,20 precast (1) 76:16 precedent (7) 37:13,23 38:7,8,9,12,15 precise (9) 17:19 18:3 78:18,19 148:2,12 149:16 182:15 183:11 predominantly (1) 139:1 preface (1) 151:1 prefer (1) 67:6 preferable (1) 67:11 preferred (4) 46:3,13 66:15 68:8 prepare (1) 36:20 prepared (2) 65:18,19 preparing (2) 131:25 200:8 prepping (1) 123:2 present (5) 27:21 28:17,17 69:25 77:7 presented (2) 27:19 66:4 presenting (1) 27:5 presents (1) 182:12 pressure (1) 100:18 presumably (2) 52:7 164:17 pretty (3) 50:2 99:13 156:6 prevent (2) 117:21 122:15 preventing (2) 181:18 182:24 previous (13) 7:15 8:15 14:9 36:9 43:24,25 48:8 60:18 62:11 87:12 91:5 103:10 188:6 previously (18) 19:18 29:8 32:2 43:22 46:8 59:24 60:5 82:13 93:12 104:16 117:2 118:16 164:19 165:25 183:14 188:6 190:5,6 price (5) 46:15,16,20 95:25 96:2 priced (1) 62:19 primer (1) 12:22 principle (8) 12:2 17:19,21 18:3,4 142:9,17 183:12 principles (3) 182:6,18,20 print (1) 33:9 prior (6) 50:7 117:14 135:3 147:16 148:21 170:4 priority (1) 71:22 probably (41) 9:13,13 28:12 33:18 34:13,22 48:22 57:16,16 63:22 88:20 92:25 94:5 97:9,9 98:19 99:15,15,18 105:4 106:5 109:13,14 130:8,8,21 131:7 136:10 142:24 147:9,9,10	150:9,10,11 164:11 167:6,7 177:13,24 200:25 probing (1) 128:24 problem (5) 87:23 88:2 169:12 170:1 179:21 process (11) 2:6,16 75:24 85:5 109:17 111:19 148:23 159:7 184:2 186:12 193:10 procurable (2) 144:7,10 procure (1) 103:18 produce (1) 46:10 produced (3) 71:12 115:23 170:12 product (63) 7:1 8:4,18 9:1 13:15 14:2,22 15:1,8 16:10 18:21 19:15 29:7,8,24 31:15 37:12 53:23 54:6,19,19 55:2,4 59:3 62:13,24 63:6,7,9 64:17 74:25 75:10,15 76:22 84:23 89:15 92:20 93:11 96:20 102:3,16,17 104:6 121:5 130:5 132:14 133:11 134:18 135:4 138:13,14 147:3 150:13 152:6,15,18 153:2 154:7 155:24 156:12,18 157:9 179:4 products (36) 4:25 5:2 12:23 15:17,22 17:7,22,23 18:17 38:7 45:15,25 61:12 70:14 80:24 82:10 85:19 92:17 94:6,22 122:13 151:8 152:3 156:10,17 162:4,8,9 163:6,13,18,22,24 171:24 174:10,17 professional (1) 109:7 professionally (1) 108:18 proficient (1) 20:9 programmes (1) 128:5 programmewise (1) 93:14 progress (1) 100:10 progressed (3) 50:24 100:20 104:25 project (48) 27:20 32:3,6 33:5 50:24 51:14,20,21 52:1,4 55:14,19 62:15 75:6,11,22 76:2,20 79:20 82:25 94:2 96:15,19 99:14 110:20 118:6 125:24 126:10 127:19,20,21,24 128:11,12,13 132:6 133:6 139:23 147:16 152:10 155:9,20,24 168:18 182:23 183:10 184:9 199:6 projects (21) 8:12,15 19:17 43:25 49:14,17,18 50:5,16,17,19 52:22 58:21 59:17 82:12 87:18 98:5 103:18 125:24 188:6 199:5	promise (1) 19:23 promised (2) 119:20,21 promote (1) 8:4 promoting (1) 129:16 propagation (1) 15:10 properties (1) 151:8 property (1) 183:16 proposal (5) 23:7 25:13 29:20 39:20,20 proposals (2) 69:17 144:12 propose (1) 32:19 proposed (12) 24:12,15 27:7,25 29:6 35:13 39:15 61:8,17 95:24 158:1 159:3 proposing (4) 27:3 38:3 138:3 157:5 proprietary (1) 173:22 protection (5) 80:24 190:25 195:10,15,22 protects (2) 12:21,22 proteus (2) 22:14,19 prove (2) 5:10 154:20 provide (8) 40:18 72:18 86:23 94:12 117:20 159:10 165:13 182:8 provided (11) 23:17 66:14 103:17 115:12,22 116:21,23 117:9 144:13 183:4,6 provider (1) 83:7 provides (2) 72:8 146:9 providing (7) 19:12 45:11 70:12,13 88:6 147:7 185:14 provision (2) 118:24 145:1 provisions (3) 142:4,4 145:3 pu (1) 136:19 publications (5) 162:7 174:9,16,23 175:18 pull (3) 142:11 168:6 180:10 pulled (1) 129:14 pulling (5) 126:14,15 179:14,14 180:4 pulse (1) 128:23 pure (1) 105:8 purely (3) 62:23 81:14 128:13 purpose (5) 6:22,24,25 32:12 61:23 purposes (4) 13:3 69:4 132:21 133:4 pursue (4) 114:4,6 135:21 140:6 pursuing (1) 93:20 pushing (2) 69:5 97:23 putting (5) 19:24 93:22 161:5 178:15 194:15 pvd (2) 12:21 15:9	11:2,6,9,21 12:3,6,10 13:5,10,13,18,21,24 14:1,11,14,18 15:7,15 16:1,6,17,21,24 17:3 18:1,7,13,18 19:14,22 20:3,14,21,24 21:1,4,13,18,21,24 22:3,6 23:11,13,18 24:2,7 25:7,10,12,14,20,22,25 26:3,5,13,18 28:9,13 29:1 30:4,6,17,21 31:1,6,10,16,21,23 32:7,16,18 33:3,7,20,23 34:3,14,18,24 35:4,15,19 36:10,18,24 37:2,6,9,17,21,23 38:8,10,12,14,19 39:6 40:4,10,21 41:12 42:11,14,19,23 43:6,11,15 44:4,9,12,22 45:18,24 46:12,21 47:1,4 48:6,10,13,20,23 49:2,21,24 50:1,3,5,9,11,14,16,19 51:3,5,10,12,17,20,23 52:3,6,8,12,18,21,24 53:1,5,8,10,13,17 54:1,15,18,23 55:2,4,8,11,14,18,21 56:3,10,21 57:2,13,19,22 58:1,12,14,17 59:1,21,25 60:2,4,6,15,21 61:1,4,13,15,20,22 62:6,10 63:1,8,11,16 64:22,24 65:1,5 66:13,15,18,22 67:2,9,13,15,18,23 68:5,15,25 69:8,12 70:7,10,19,21 71:5,14,25 72:20,24 73:4,9,11,15,19,21 74:3,14,17 75:8,10,13,15,19 76:4,6,10,12,20 77:2,4 78:11,17 79:2,9,13,23 80:13 81:5,8,10,13,15,23 82:2,4,11,17 83:18 84:3,7,10,16,21,25 85:6,12 86:4,7,11,16 87:2,7,12,15,18,21 88:3,10,14,23 89:4 90:4,8,11,13,18 91:4,10,19,25 92:6 93:7,15,19 94:19,21 95:2 97:2,8,12,17,20 98:18,21,23 99:2,11,17,19 100:12 101:2,12,20 102:3,8,12,18 103:2,14,16 104:3,10,21,23 105:6,9,13 106:2,7,11 107:2,6,10,13,15,21 108:4,9,12,16 109:1,5,10,16,23 110:2,4,14		
						Q		
						q (664) 1:18 2:7,10,13,15,18,20 3:7,9 4:8,15,22 5:1,3,7,12 6:15,24 7:4,19,25 8:6,9,11,17,21,23 9:7,15,18		

111:3,5,10,13,16,23	quarter (1) 6:17	74:21 80:20 81:6,18	received (6) 2:21,24	198:4,22	reminded (1) 26:16	155:19 160:14 199:18
112:7,13,21 113:4,8	queries (2) 27:23	85:8,10,14 89:18	62:17 160:15 180:6	regular (1) 158:25	reminder (1) 1:22	200:19
114:4,18,21	198:23	90:22 122:11	195:2	regulations (20) 6:20	remit (2) 198:2,8	result (3) 101:23
115:6,11,17,21,25	query (5) 72:16 91:10	ratings (4) 83:10 191:16	receives (1) 82:20	7:8 9:4 14:3 15:19	remote (1) 138:25	102:4,20
116:10,20 117:3,6,12	106:13 190:22 192:15	192:20 193:20	receiving (2) 80:7 96:25	34:20 57:8 73:25	removal (1) 32:21	results (1) 10:25
118:5,9,11,20	question (59) 9:18 10:7	rationalisation (1)	recently (1) 168:23	112:11 124:2,6 155:7	removed (1) 51:25	resume (2) 127:5
119:2,5,14,17,23	17:4 18:2 19:1,7 22:8	181:4	rechecked (1) 77:15	158:2 159:4,18 181:16	repeat (1) 62:17	201:11
120:3,8,10,14	25:21 26:1,1 27:17	ray (2) 56:17 194:25	recognised (3) 4:25,25	186:2 195:5 197:24	repeating (1) 43:23	retained (1) 36:1
121:1,9,16 122:8	37:6 41:6 73:16 75:4	rbkc (5) 5:22,25 28:16	188:16	198:18	replace (1) 55:5	retardance (10) 158:7
123:4,9,12,23	85:9 94:14 96:12	30:11 40:17	recollection (11) 65:2	regulator (1) 197:17	replaced (2) 54:3 56:4	160:8,24 161:3,8
124:4,14,17,22,24	102:18,23 107:17	re (3) 39:15 47:7 69:16	80:13 131:17 142:15	reinforced (8)	replacement (5)	162:2 166:13 178:16
128:1,4,10,21	109:3,12,25	reaction (5) 7:8 9:4	157:7 170:22	173:16,19,25	54:6,15,18,19 158:8	179:20 180:1
129:3,11,18	111:10,16,24 112:4,24	14:23 15:2 83:19	171:14,22 179:22	174:11,18 176:24	replied (1) 192:14	retardant (5) 13:15
130:13,18,22	117:8 119:17,23 122:3	read (50) 2:13,15	186:22 187:18	177:21 179:11	reply (1) 47:17	14:25 15:8 16:3
131:3,8,14,24	124:14 148:9 155:21	7:2,12,16,23 14:8	recommend (3) 27:20	reject (2) 5:21,24	report (8) 56:10,14	158:10
132:2,5,11,16,25	161:5 164:1,7	15:5,24 16:15,17 18:5	28:1 72:8	relate (1) 142:5	71:6,15 115:15,18	return (1) 65:17
133:9,14,24	166:8,14 170:4 171:23	25:3 69:18 75:3,4	recommendation (1)	related (3) 162:1 177:9	131:18 157:25	reverse (1) 122:12
134:3,6,14	172:3 177:4 179:25	81:3,20,20,21 85:20	72:6	201:20	reports (1) 57:25	review (4) 50:2,24
135:9,14,16,21,24	180:14,25 181:11	87:2 88:15 106:4	recommendations (5)	relates (3) 105:20	represent (1) 187:6	138:25 166:9
136:4,9,11,24	184:8,23 190:21	111:7 112:5 114:1	17:24 162:6 168:23	131:19 168:7	representative (1) 28:9	reviewed (1) 163:6
137:1,7,9,14,17,22,25	191:14 193:2,18	118:8 122:24,25	174:9,15	relating (34) 4:10,20	request (9) 97:7 101:10	revised (1) 101:7
138:5,11,15,24	198:10 199:22 200:1	125:19 130:6,6	record (8) 71:8,18 78:18	6:10,19 8:3 9:14 23:8	107:22 164:2 165:3	revision (1) 135:6
139:7,12,15,18,22,25	201:2	131:6,22 132:7 137:4	164:1,4,5,6 165:15	26:17 30:15,15 33:18	166:25 167:3 180:2	revisit (2) 167:9 199:22
140:2,11,14,20,22	questions (18) 1:14,24	144:18,24 156:7	recorded (1) 81:16	35:21 42:9 48:4,12	186:9	reynobond (51) 2:24
142:11,19 143:1,14,20	39:15 51:5 57:13	163:24,25,25 168:23	recording (1) 170:23	57:18 62:23 73:14	requested (1) 101:9	3:1,4,14 9:1,22
144:1 145:10,15,17,22	79:10 96:9 138:11	175:23 180:12,13	records (2) 151:13	76:24 77:1 99:10	requests (1) 185:2	10:4,15 12:14 33:13
146:3,23	151:1 166:17,19,21	181:9 182:4 192:18	164:22	100:16 116:16 127:4	require (1) 166:12	35:24 36:13 43:17
147:2,6,18,21	171:20 190:13	reading (17) 2:3 6:5	recyclable (1) 80:25	150:6,17 152:3	required (13) 27:6	45:8,19
148:6,11,16,19	200:3,15,18 203:4	10:13 11:18 15:13	red (6) 27:15,17 71:23	160:21,22,23 161:12	33:14 40:18 75:2	46:7,11,16,17,23
149:2,8,10,21,24	quick (2) 166:9 190:21	40:1 83:11 115:16	72:2 96:9 130:15	163:13 167:16 190:21	95:12 106:12,14,17	54:3,15 55:18 56:5
150:3,7,13,20 151:22	quickest (1) 93:14	120:20 123:8,11,17	reduction (1) 47:21	relation (17) 7:7,7 8:13	118:13 146:19 181:15	58:8,10 67:5 70:1,5,13
152:2,12,14	quickly (4) 16:8 40:12	129:11 157:18 170:14	refer (4) 36:24 49:17	9:9 14:20 15:18 20:21	184:10 199:10	76:7,13 88:25 92:21
153:4,7,9,13,15	47:16 60:10	196:9,24	136:1 142:17	23:5 59:15 87:15	requirement (3) 116:17	93:4,8,11 95:15,19
154:5,11,25	quite (21) 14:20 18:1	ready (4) 33:11 64:9	reference (23) 3:19	110:16 141:5 152:17	158:7 184:21	96:21 97:4,13 99:22
155:4,9,11	19:7 32:12 35:1,4	172:22 182:8	8:24 20:17 33:13	159:5 195:5 197:8	requirements (16)	100:15,17 104:12
156:2,4,15,25	40:12 44:18 85:16	realised (1) 24:15	74:25 84:5 105:6	200:10	12:20 74:15 87:24	134:11 163:18,21
157:7,11 158:16,21	100:4,6,8 101:1	reality (1) 42:24	145:22 146:7 162:24	relations (1) 140:5	105:20 144:11	165:23 181:7
159:1,9,14,20	108:21 137:3 144:18	really (20) 4:21 5:6	163:11 166:24 172:5	relationship (6) 46:7	145:19,25 146:6,11	reynobonds (3) 44:24
160:2,22	164:17,20 166:6 167:2	23:10 32:13 36:5 44:5	174:23,25	92:21 93:2,3 100:16	154:16,22 174:8	45:15,25
161:1,7,11,14,21,23,25	179:16	48:22 73:3,10 82:5	175:13,16,19 176:21	140:3	176:14 183:23 184:6	rfi (7) 105:15 106:5,9
162:23 163:4,7,23	quoted (1) 166:10	126:18 167:3 173:10	177:17 179:4	relevant (3) 33:10	186:19	108:9 110:7,11,15
164:1,5,17,20,25		177:4,6 179:23 190:12	187:10,23	91:6,11	requirementspreparatory (1) 174:5	rfi001 (1) 105:19
165:8,14,19	R	194:2 197:17 199:13	referenced (3) 24:12	reliance (1) 133:4	reread (1) 125:1	rfi001cavity (1) 116:16
166:2,21,24		reason (12) 4:2 9:19	46:19 160:18	reliant (3) 135:2 186:6	rereading (1) 13:9	rfis (1) 128:6
167:9,13,17,20 168:8	rails (2) 96:17,22	18:13 83:3 95:18	references (3) 162:8	196:20	research (1) 85:20	rightthand (7) 106:12
169:17,21 170:8,11,20	rainscreen (51) 3:24	119:2,17 135:19 138:5	173:11 176:6	relied (1) 63:15	residential (1) 50:6	114:23 129:8 143:3
171:11,13,19 172:1	22:12,19 35:12 47:7	171:4 185:9 192:9	referencing (3) 45:19	relieve (1) 144:16	residents (1) 66:9	173:8,14 187:9
174:2,22 177:12,16	50:6,10 51:15,18	reasonable (3) 18:20	107:18 177:25	reluctance (3)	resistance (1) 17:12	rightly (3) 180:4,7,13
178:6,25 179:7,13,21	53:15,22 54:3 56:25	201:2,3	referred (3) 16:2,25	100:12,14,16	resistant (1) 165:23	rigid (4) 74:20 75:16
180:14,20,25 181:6	58:6,22 60:23 62:12	reasonably (3) 132:5	144:13	reluctant (1) 32:1	resolve (1) 98:2	151:22 154:14
182:5,18,21	63:3 64:18 76:7,13	177:24 200:21	referring (7) 33:15	rely (4) 20:10 186:20	resolved (2) 111:10	ring (2) 75:14 112:2
183:2,17,20	83:1 88:12,17 89:1	reasoned (1) 23:24	35:17 50:16 87:12	192:21 193:6	113:6	rise (1) 199:21
184:1,5,8,14	91:6,14 98:3 100:15	reasons (1) 49:16	106:8 107:21 143:22	relying (12) 18:11	respect (3) 85:2 124:14	risk (16) 7:10 19:14,24
185:5,12,19,21	103:22 104:11 117:19	recall (70) 4:19,21 5:9	refers (9) 55:23 103:9	107:7,16 118:17	125:16	28:6 66:24 67:2,9,9,15
186:5,8,14,17,22	118:6 129:17 134:11	7:17 10:1,11 15:6,25	105:19 115:4 117:21	124:17 142:21	respects (1) 29:25	68:3 70:23,25
187:5,8,13,17,21	152:5 167:25	16:16 21:12,13,13,20	158:14 160:11 170:11	159:2,17 192:13	respond (4) 65:23	71:11,25 95:22 194:11
188:1,7,11,14,19,24	168:1,17,19,25	23:3 25:4,5,7,22	180:14	193:22 197:9,11	108:17 164:3 165:12	rivet (2) 13:1 21:2
189:4,7,14,17,21	169:5,13,18,18,19	28:22,23,24 33:17	refurbishment (5) 18:21	remains (1) 199:24	responding (1) 164:22	riveted (5) 10:3,20 11:8
190:1,10,24	175:5 177:19 178:2,14	42:13 48:22 53:16	49:10 80:22 89:12,19	remedial (1) 57:18	responds (2) 41:8 65:11	12:19 66:11
191:5,8,25	183:13	64:16 70:24 71:3,4	refurbishments (2)	remember (50) 2:3	response (15) 1:20	rivets (2) 56:23 65:17
192:3,9,14,17	raised (10) 44:1 57:6	72:22,22 73:17,20	60:18 94:5	11:18,19 15:5,13	27:8,11 96:8 101:4	rml (2) 57:5 77:21
193:2,12,18 194:2,9	62:20,21 158:11	79:7 80:7 92:3 96:25	regard (2) 96:16 170:3	21:10,18,22 23:4 26:9	113:8 116:13 120:18	robustness (4) 161:17
195:19,25 196:19	159:23,25 160:1	97:1,6 102:11 106:5	regarded (5) 7:9,21	42:6,8,11 47:2,3 49:24	122:5,22 164:1,6,7	162:14 179:6 180:9
197:5,7,15 198:5	168:22 169:10	114:20	9:10 15:17,23	51:6 52:22 58:14	165:13 191:8	rockpanel (15) 83:9
199:5 200:13	raising (2) 86:22 169:14	123:2,3,8,11,17,18	regarding (5) 62:22	73:11,14,21 80:10,11	responses (1) 27:15	88:17,19 91:8,16,21
qualification (1) 112:21	range (4) 27:19 30:10	133:9,13 135:15,16,23	92:4 95:12 158:15	83:11,13,13,14,16	responsibilities (1)	94:22 95:17,20,23
qualifications (2) 94:18	79:25 125:15	136:2,25 137:3,23	180:9	94:14,24 97:3 98:14	140:8	97:5,14 99:21 100:13
155:15	ranges (1) 3:18	143:13,14,14,16 153:8	regardless (2) 178:21,22	101:10,11 102:1,2	responsibility (5) 28:10	102:10
qualified (1) 109:2	rather (11) 6:12 24:18	158:21 168:14	regards (1) 110:18	112:17 114:18 118:21	124:4,20 140:8 147:7	rockwool (55) 60:7,17
quality (3) 40:18 138:19	31:2 36:18 52:1 54:8	169:14,20 170:8,13,14	regeneration (1) 89:13	127:3 129:11	responsible (5) 51:17,23	61:9,24 62:1,4,13,23
197:1	58:8 68:7 82:6 195:11	171:4	regimes (1) 5:2	131:12,13 134:12,24	124:7 127:22 183:22	63:7 76:25 79:11,24
quantities (1) 139:19	197:18	receipt (2) 109:16,19	register (1) 120:24	149:16 152:9 164:25	rest (6) 65:22 90:25	80:24 82:12 83:3,8
quantity (1) 139:8	rating (17) 17:12,17	receive (1) 98:11	regs (4) 126:14 194:8	191:3		84:21 85:3,7
	72:12 73:1,4,7,13					

86:5,8,13,17,18 87:1	116:12	90:20,25 93:21	181:12	174:7,14,22	service (2) 35:25 45:12	signoff (1) 193:25
88:19,22,24 89:25	ryd000181541 (1) 114:9	113:10,16 117:16	sea00002275 (1) 75:20	175:8,12,12 176:11,21	services (2) 19:21	silver (1) 4:5
90:22 91:7 92:13 93:3	ryd000181542 (2)	123:24 124:14 136:12	sea00011033 (1) 65:9	178:6 179:21 182:5	185:14	similar (8) 29:7 38:6
94:6,22,25 95:18,20	110:9 113:8	138:2 155:20 156:6	sea00011069 (1) 69:13	186:5,22,25 187:3	session (1) 39:16	51:1,1,4 151:8,8 152:1
96:14,16,20	ryd000181543 (2)	160:3 176:20 187:12	sea000110993 (1) 44:25	188:1,7,11 189:4,5,7	set (14) 1:10 37:13,23	simon (38) 1:5,7 4:1
97:5,14,23 99:13	105:16 110:7	sample (11) 14:22	sea00011581 (1) 77:5	190:10,22 191:8,17,20	66:11 77:5 113:20	22:17 24:21 39:12
100:13 102:13,22,24	ryd00021252 (1) 103:5	15:1,8 16:3 45:8,20,21	sea000115814 (1) 77:10	199:18 201:20	130:1 131:6,11 140:7	42:2 47:6,9 57:17
103:3 104:12,18,24	ryd00023468 (3) 160:2	47:3 69:24 84:18	sea000117301 (1)	seeing (13) 4:19 6:9	173:23 176:17 187:2	77:7,13 83:20 89:23
105:3,6	173:6 200:2	169:4	121:17	57:25,25 67:5,10 80:7	200:19	97:25 98:7 101:6
rockwools (4) 89:3,12	ryd00039499 (1) 136:11	samples (4) 27:22 41:17	sea000117302 (1)	105:1 117:15 146:16	sets (3) 38:7 114:16	105:17 108:6 110:12
93:10 102:9	ryd00039507 (1) 129:7	45:10 46:23	121:17	152:9 153:8 170:8	160:10	116:8 126:9 127:25
role (11) 12:3 50:19	ryd000395073 (1) 131:8	samplesmaterial (1)	sea00013076 (1) 194:24	seek (9) 109:9,10 150:3	setting (2) 3:22 195:4	128:7,11 129:2 137:9
51:17,23 75:5 128:1	ryd00039517 (1) 134:16	47:8	second (15) 21:8 29:3	157:2 166:14 191:2	seventh (1) 76:12	139:16 150:10 158:20
140:4 166:18 182:23	ryd00039964 (1) 195:25	sarah (2) 40:14 43:2	32:18 33:7 45:6 56:13	192:5 193:4,7	several (1) 19:17	160:6 168:15
184:1 198:15	ryd0009380 (1) 95:4	sarabs (1) 41:1	66:22 68:5 69:17	seeking (4) 44:5 110:22	shaded (1) 187:1	169:10,25 171:3
roles (2) 51:19 128:15	ryd00094213 (1) 150:24	satisfied (1) 194:14	82:22 92:8 97:23	124:23 184:25	shadow (2) 7:24 35:5	184:18 195:1 203:3
roof (2) 104:15,16	ryd0009421310 (1)	satisfy (2) 124:1 155:6	128:6 134:7 190:24	seem (3) 39:18,24 115:7	shall (4) 144:6,9,14,15	since (13) 19:19 124:25
roofs (1) 182:11	150:25	save (2) 24:19 141:25	section (16) 4:12 7:11	seems (5) 26:5 41:2	shared (5) 78:1,4,13	125:1 131:25 137:24
room (3) 64:1 104:16	ryd0009422010 (1)	saving (6) 24:14 25:18	114:24 120:1	92:18 95:5 181:23	79:5 125:4	150:15,16 152:13
146:15	155:12	33:2 46:16 47:21	145:19,23,24 146:6,9	seen (57) 2:5,6,7 13:11	sharing (1) 79:6	153:9,11,12 163:6
round (4) 123:15	ryd000942206 (1) 49:5	66:14	161:13 167:18,18	14:3,8 18:19,25 21:5	sheet (4) 9:1 106:6,9	198:9
149:13 162:19 189:1	ryd0009423626 (2)	savings (9) 24:12,16	174:25 175:14 176:1,2	30:7 41:5 46:8 56:20	136:6	single (5) 119:9,10,12
route (2) 154:25 182:8	53:19 58:4	30:12 48:18	sections (4) 15:16	57:14 58:4 62:19	sheets (4) 12:15	125:22 129:14
routes (1) 92:4	ryd0009423627 (2)	68:11,20,21 70:4	113:19 162:14 179:6	64:20 71:4,19 75:17	146:15,15 148:2	sir (39) 1:3,8,10,12 59:9
royal (1) 79:7	55:21 57:3	79:19	sectionelevations (1)	76:4 89:16 91:1,4	short (3) 64:7 127:12	63:21,23 64:5,9,11
rs (2) 86:8 137:6	ryd0009423651 (1)	saw (22) 2:10 3:4 6:21	113:15	97:17 101:21 105:5	172:20	125:11,14
rs5000 (16) 61:20 74:5	59:14	55:16 61:9 85:6,17	secure (1) 86:2	108:5 111:7 113:13,24	should (38) 16:11 17:12	126:4,17,22,25
84:21 129:5,6,7,21	ryd0009423671 (1) 5:14	108:14 109:22 112:13	secured (1) 96:15	116:13 123:21 124:25	20:6,15,19 26:15 34:1	172:3,7,14,16
133:11 134:18 135:25	rydon (70) 1:5 5:14	114:18 116:1 122:24	see (207) 1:22 2:10	126:11 129:12,15	36:1 53:24 61:24 65:5	172:8,14,18,22,25
137:18 147:24 149:4	12:6,6 14:10 18:19	133:24 134:3 135:11	3:1,25 6:17 7:10 8:25	134:23 146:23,25	87:2 91:19 102:16	175:24 194:11,20,22
151:18,23 156:18	19:14,22,23 23:19	137:1 155:17 185:13	9:5,22 10:6 11:12	147:23 152:13,17,21	107:10 111:10 112:25	199:15,20
rs5080 (2) 136:16	26:24 27:3 28:9,21	186:12 187:18 197:16	12:11,17,20 14:14	153:4,9,12,16 154:5	117:9 121:6 125:6	200:17,22,25
137:19	31:25 34:12 35:10	saying (13) 25:16 38:10	17:3 23:11,13 24:23	155:22 164:19 165:20	133:5 140:22 150:2	201:4,11,16,18 202:2
rubric (2) 10:4 141:18	45:14,25 47:13 48:18	73:12 86:24 87:3 95:1	27:8,10 28:17,19,20	170:18 187:20 188:6	151:1 154:16 166:14	site (34) 42:2 50:21,24
run (4) 40:13 89:7 92:2	49:7,14 50:8,9 53:18	100:7 118:3 166:11	29:1 30:4	193:13,16	181:14,16,17 183:4,6	51:13,21 110:22,24
110:6	55:22 56:18 57:2,5	170:17 180:11 194:3	31:10,16,24,25	select (2) 49:15 84:10	188:21 189:11	126:9,10 127:24
rundown (1) 37:8	58:3 64:25 68:12,20	195:17	33:3,20 34:3,14,18	selected (2) 26:24 177:7	196:18,25,25	128:12 138:16,16,25
running (2) 98:5 110:9	73:15,21 77:21 79:23	scale (2) 41:17 48:4	35:2,8 37:19 38:19	selecting (1) 69:21	200:10,23	139:6,6,7,14,15,20
ryd00000421 (2) 133:16	107:2,6,10 118:18	scanell (2) 40:14 43:2	40:16,19 41:10,12	selection (2) 42:3	shouldnt (4) 8:4 83:24	141:1,6 147:10
135:9	127:21 128:22 133:9	scenario (3) 88:8 98:10	44:9 45:24 46:21	190:19	87:9 98:10	149:2,3,13,20 151:20
ryd00003683 (1) 24:9	139:12 140:9,11	99:5	52:8,12 53:8,14 55:22	selfevident (1) 154:2	show (9) 56:23 67:7	152:24 153:1 157:22
ryd000036832 (1) 24:11	141:21 142:20 143:23	scenes (1) 29:10	56:6,13,15,21,23	sell (1) 92:19	77:18 83:18 91:17	158:16,19,25
ryd000037052 (1) 27:9	145:9,24 147:6 149:23	schedule (5) 141:11,13	59:16	send (5) 23:1 65:15	140:23 150:23 168:11	sitebased (2) 127:24
ryd000037053 (1) 27:9	151:2 155:19 156:21	144:25 145:4,8	60:9,11,12,17,19 62:6	68:23 92:14,14	176:9	128:14
ryd000037054 (1) 26:19	157:23 158:1,17	scheme (4) 66:8	64:22 65:1,13,15	sending (7) 5:4 32:11	showed (3) 67:3 108:5	sitting (6) 133:22
ryd00003932 (1) 1:19	159:3,10,17	100:23,24 194:8	66:22,24 68:19 69:8	42:7 111:25 136:5	145:1	131:17 158:21 165:8
ryd00003953 (2) 2:20	166:15,15,21 168:15	school (1) 80:21	70:15 71:21,23 72:2	164:23 177:5	showing (7) 65:19 66:24	185:1 191:5
21:6	183:21 186:6	scope (2) 72:9 104:17	74:10,18 76:1,6,8,18	sends (4) 80:5 114:10	67:6 101:16 115:10	situation (2) 95:12 98:2
ryd00003964 (1) 3:9	rydons (14) 14:1 20:4	score (1) 11:4	77:2,6,11 78:21,23	190:18 191:10	178:19 184:19	six (1) 19:18
ryd000039642 (1) 3:22	36:19 41:15 59:13	scotland (1) 7:10	79:2 80:4,13 81:10,14	sense (3) 31:6 87:2	shown (12) 56:22 77:5	size (1) 159:5
ryd00003965 (1) 47:4	69:9 101:18 102:19	screen (4) 1:22 173:8	83:19 84:10 85:17	127:20	78:24 93:9 117:20	sketch (1) 65:19
ryd00004085 (1) 22:7	124:4 147:4 149:24	174:14 179:24	87:7,9 89:7	sent (24) 1:19 2:22 3:14	134:6 146:16 159:21	skill (1) 18:20
ryd00004142 (1) 32:8	156:15 166:18,22	scroll (1) 113:9	90:19,20,21,23 91:11	6:12 20:6 21:4 33:19	177:4 189:1,9 191:16	skip (1) 95:3
ryd00004154 (1) 29:12		scrutinise (1) 9:16	92:13 93:20,21 94:10	81:3 86:21 114:19	shows (4) 3:22 96:8	sl (4) 24:21 25:1
ryd00004204 (1) 68:16		scrutinised (1) 7:23	95:7 96:11,12 98:5	115:7 133:18	115:1,3	77:13,22
ryd00004221 (1) 39:9		sea0000016947 (1)	104:8 105:25 106:2,11	134:17,18 135:7,24	si (2) 41:15 136:14	slab (2) 83:24 87:9
ryd00004604 (1) 28:15	safe (2) 63:14 87:5	176:9	107:15 109:16,17	136:22 138:7 140:16	sic (3) 33:9 34:5 72:10	slightly (9) 44:23 61:7
ryd00005064 (1) 67:23	safety (7) 21:25 67:20	sea0000016955 (1)	110:8,12,14 112:13	165:14,21 186:24	side (14) 15:22 68:25	70:22 125:8 148:20
ryd00006697 (1) 79:13	70:8 82:16 109:11	173:9	113:19	193:14 195:4	106:12 114:25 120:6	156:9 161:5 171:21
ryd000066971 (1) 82:17	154:13 193:5	sea0000016956 (1)	114:5,9,16,21 115:4	sentence (3) 15:21 21:8	132:15 134:7	173:12
ryd000066972 (1) 80:16	sales (23) 50:12 62:2,24	173:18	116:12,16,18,20	130:22	151:25,25 173:7,8,14	small (1) 17:14
ryd00007567 (1) 83:19	68:9 69:1 76:24	sea0000016957 (1)	117:25 121:21	sentences (1) 33:7	174:22,22	smith (1) 157:23
ryd00008863 (1) 89:5	81:14,16,21,23 82:6	174:4	122:1,4,6,21 123:13	separate (1) 168:22	sidebyside (1) 173:3	smoke (3) 4:5 182:8,24
ryd000088632 (1) 89:6	83:14 85:17,19,20,24	sea0000016968 (1)	129:3,8,9,19 130:22	separated (1) 191:18	sides (2) 75:1 146:17	snag (1) 197:6
ryd00009105 (2) 60:6	90:2 91:1 94:25	178:7	131:16 132:20 134:15	separately (2) 3:15	sig (1) 148:3	solemn (1) 19:23
93:21	100:5,6,11 129:16	sea0000016969 (2)	140:18 141:7,10	169:7	sign (1) 143:21	solution (3) 93:13 96:6
ryd000091052 (1) 60:13	same (45) 2:23 3:11	167:21 175:4	144:19,22 145:17,18	separation (1) 169:13	signature (3) 140:18,20	106:16
ryd00009673 (1) 96:7	14:13 20:21 32:10	sea0000016970 (1)	146:5,9,10,13 149:12	september (10) 78:6	143:18	somebody (2) 82:12
ryd000096732 (1) 96:12	34:17 39:10 40:23	175:11	151:25 152:6	105:18 106:11,13	signed (4) 47:16 111:21	149:23
ryd00011229 (1) 97:22	42:24 46:11,20 47:18	sea0000016973 (1)	153:1,7,10,13,20	110:10 114:11,14	145:15 193:9	something (21) 5:13
ryd00013698 (1) 101:2	51:11 54:4,10,16	74:8	155:25 159:1 164:21	121:20 148:12 149:15	significant (5) 23:13,16	6:12 19:13 50:4 61:7
ryd00013699 (1) 101:13	55:2,3,4,7 56:4 58:24	sea00000516 (1) 181:8	167:1,23 168:2 169:2	sequence (1) 105:2	28:6 71:8,19	83:22 86:12 94:1
ryd00018154 (2) 110:6	59:3,4,13 61:12 65:23	sea000005165 (1)	173:8,11,12,14,21,23	serious (1) 169:11	significantly (1) 17:17	105:22 109:21 129:14
	67:24 68:15 89:15					

137:11,12 150:19	152:20 156:17,18	step (1) 41:16	5:17 18:10 49:11	200:13	technical (17) 12:12	177:11,14 178:23
155:17 158:5 189:24	specifies (1) 146:23	stephen (1) 28:20	119:8 128:19,24	surface (7) 7:9 8:3,4	33:12,15 63:17 95:14	180:10 181:8
191:23 192:4,11	specify (2) 135:12,18	steps (5) 42:3 43:12	142:21,23 144:6,9,12	9:11 15:12,17,23	119:11 121:14	188:11,17,17,17,23
194:18	specifying (1) 129:21	63:12 86:16 124:19	197:1,8,11	surfaces (1) 8:14	126:2,12 131:5	195:12 201:4
sometime (1) 149:17	specs (2) 104:6,7	steve (20) 26:12 29:16	subcontracts (1) 143:17	surprise (4) 89:25 169:6	132:9,15 151:24 165:5	therefore (16) 10:9 61:1
sometimes (1) 186:4	spelled (1) 170:14	32:10,11,13 33:1 36:7	subject (5) 22:1,11	191:22 192:3	171:17 186:21 188:14	62:5 63:11 67:15
somewhere (3) 46:19	spend (3) 66:8 100:23	38:23 39:3,14 56:17	70:22 79:11 157:11	surprised (6) 90:2,11	technically (3) 6:14	80:20 81:18 89:18
88:8 148:7	126:6	57:16,24 67:24 68:17	subjects (1) 125:24	110:20 184:23 185:1	20:9 126:1	95:21 102:3 106:20
soon (1) 148:24	spent (1) 194:15	148:25,25 149:18	submit (2) 5:21,24	193:3	technology (5) 134:9	120:19 130:2,24
sort (11) 30:2 62:2	splice (1) 176:2	150:12 151:10	submitted (1) 27:4	surrounding (2) 38:2,4	160:13 163:9 175:2	154:25 175:15
89:15 94:1 95:24	split (1) 128:11	stick (1) 163:21	subsequently (1) 170:4	survey (1) 56:11	178:11	thereof (1) 144:5
128:8 132:12 137:8	splitting (3) 55:6,8,12	sticking (2) 88:25 103:3	substantial (1) 66:5	suspect (1) 27:23	telephone (1) 191:13	theres (10) 9:18 10:6
140:24 199:15 200:10	spoke (2) 66:4 100:21	still (18) 23:19 24:2,3	substantially (2) 20:8	swap (5) 84:14,18,25	telling (4) 36:11 145:11	26:16 36:15,16 46:6
sought (2) 72:18 159:11	spoken (6) 23:16 45:3	42:21 52:10 79:17,21	35:11	151:10,18	180:12 197:18	77:25 108:21 132:9
sounds (5) 9:18 49:23	95:8,11 157:3,4	93:5,12 95:16 98:4	substantiate (1) 17:11	switching (1) 84:21	tells (1) 94:11	199:25
57:15 130:10 194:2	spread (10) 8:3,5 15:12	103:3,21 112:9,10	substitute (4) 144:14	system (62) 10:20,21	template (2) 106:6,9	thermal (4) 74:10 99:10
soundes (28) 2:23	106:21 122:15 169:1	113:5,7 148:13	147:3 150:1,4	12:19,19 21:2,2 22:22	ten (2) 59:7,10	129:24 146:24
3:4,12,22 4:17 6:4	181:18 182:9,11,24	stock (1) 199:18	substituted (2) 156:12	26:15 27:4 28:11	tenant (1) 141:19	thermally (1) 134:9
21:4,24 27:13 29:1,16	spreading (1) 117:22	stokes (6) 70:23,24	163:18	39:15 51:15 56:25	tender (15) 24:12	thermosetting (1)
34:5 40:15,24 41:8,13	square (1) 46:20	71:12 72:19,20,25	substituting (1) 156:16	63:3,3,12,13 72:15	46:4,14 49:8,13 62:17	154:14
42:7 59:22 65:10,12	stack (1) 110:16	stone (4) 80:19 81:6,17	substitution (1) 149:4	73:22 83:2,7 86:18,18	75:23 78:1,3,12,15	theyll (2) 38:2,4
66:18 69:15 77:9	stage (25) 23:20	89:17	successfully (2) 32:2	87:15 91:5,15,22	79:4 115:15,19 166:10	theyre (21) 53:9,11
105:18 108:7 184:17	25:13,15 28:2 43:20	stop (3) 195:11	129:25	96:18 97:4,13,15	tenderer (1) 62:21	55:3 61:12 85:4
191:11 192:6	46:2,5 48:2 49:13	199:16,17	sufficient (4) 123:13,19	98:3,10 99:4,8	tends (1) 105:24	107:18,19,21 109:6
sources (1) 200:23	66:10 76:20 93:5,15	stopped (2) 105:4	184:22 186:11	100:7,19 102:13,22,24	term (8) 8:2,12 25:11	142:11 148:7 156:6
spaces (1) 182:7	100:9,21,21 103:21	193:21	suggest (10) 21:1	103:22,23,25 104:12	73:7,8 98:16 188:8,9	177:9 187:14,15
span (1) 29:7	113:7 116:24 118:11	stored (3) 138:16	37:4,4 78:7 88:12	132:18,20,20	terminology (1) 190:7	194:6,18,19 197:2
spandrel (2) 41:25 76:7	129:11 149:15 158:23	139:20 162:19	101:22 102:19 119:19	133:2,3,14,19	terms (8) 19:2 39:20	198:16,17
speak (5) 3:8 68:10	193:2,3	storeys (1) 121:4	125:19 137:13	134:6,8,19,25 138:3	42:17 70:8 71:10	thick (2) 12:15 189:16
69:1 94:7 100:9	stages (1) 52:9	story (9) 22:9 28:14	suggested (3) 29:8 59:2	139:4 153:23 154:1,18	142:1 143:24 188:5	thickness (6) 75:2 77:18
speaking (1) 37:25	stainless (1) 163:20	29:9 40:11 69:13	106:16	181:19 184:8	terry (15) 110:11	78:9,25 137:20,21
spec (17) 46:4,14	standard (29) 13:14	97:21 103:3 148:20	suggesting (3) 4:13	systemised (9) 160:13	113:16,18,24 117:8,16	thing (4) 69:6 88:18
77:14,23 78:24,25	14:22 16:3 18:23	199:14	39:1 45:20	163:9 165:1 167:24	121:19,24	90:25 166:4
115:23 116:3 134:19	106:5,9 137:16	straight (10) 47:14,20	suggests (4) 6:2 36:18	168:3 175:2,7 176:15	122:3,5,10,10	thinking (6) 36:19
148:7 173:15 176:7	141:4,22 142:21,22	48:1,6,11,15 108:2	88:11 180:17	178:11	190:17,20 192:23	84:13,25 87:5,6
177:18,21	160:12,13 163:8,9	164:14 165:10 174:19	suit (1) 12:19	systems (11) 9:23	test (13) 7:1 10:25 11:2	126:22
196:10,14,20	165:1,1 167:23	stranded (1) 172:6	suitability (3) 62:14	10:3,4,6,9,23 60:22	16:12 17:11 18:8	thinks (1) 66:23
specialist (22) 5:17 12:9	168:2,3 175:1,2,7,9,17	strategy (1) 184:9	133:10 157:9	80:20,23 83:4 89:18	19:15 22:21,23 102:17	third (15) 7:6 11:10
18:10,14 19:8,9,10	176:15 177:18 178:11	string (2) 47:6 60:9	suitable (11) 17:22		130:1 137:25 153:23	20:11 22:20 34:7,25
20:19 49:11 62:18	179:8	strip (1) 9:1	19:13 62:8 63:14		tested (11) 5:11 14:23	54:1 80:18 115:1,2
63:15 107:15 109:11	standards (11) 17:8	structure (1) 195:6	86:23,24 129:17		15:2,9,11 22:22	117:13 118:17 145:17
112:3,17,25 184:12,24	18:22 19:4 144:7,10	structures (1) 17:7	130:18 132:14 191:1		132:21 133:3 153:22	153:19 154:12
185:16,23 186:5 193:5	166:11,12 176:6,22	studied (2) 4:12 89:2	201:8		154:8,18	thirdparty (1) 109:11
specialists (3) 98:20	177:7 178:10	studio (38) 5:20,23 6:3	suited (3) 80:21 81:18		testing (4) 5:2 8:8	though (7) 28:23 54:23
171:18 197:21	standing (4) 39:14	12:3 20:12 29:1 34:6	89:19		174:10,17	112:13 113:23 161:1
specific (13) 11:19 17:4	152:25 172:7 179:21	38:19,24 41:9 79:8	sum (1) 8:10		tests (1) 8:17	175:24 184:2
80:11 83:6 97:1	stands (4) 173:25	107:18,19,21,24	summary (3) 59:14		text (4) 104:5 134:22	thought (19) 3:17 7:2
109:25 160:1,21	178:4,23 179:10	108:2,12,17,23	69:19 95:17		182:16 183:11	13:20 18:14 28:2
178:1,24 179:2,4	start (7) 44:24 50:9	109:1,21,22 110:22	super (1) 129:23		texture (1) 69:22	38:25 43:21 57:16
192:8	65:8 105:15 111:19	124:10,11 125:2	superior (2) 83:10 85:14		thank (28) 1:12,15 11:9	66:18 82:25 85:5
specifically (22) 9:4	153:20 195:19	171:20,23 184:16	supervising (1) 128:25		44:22 64:3 115:6	86:13,14 88:18 109:17
18:12 21:19,22 22:5	started (7) 50:23 75:24	185:4,8,10,25	supplied (3) 45:15		120:18 126:25	112:24 118:12
23:3 25:22 42:8 61:6	110:22,24 111:1,2,11	186:8,20 194:3	54:18,20		127:2,6,7,10,15 146:3	195:11,17
72:22 73:11,21 87:15	starting (2) 75:11	195:4,7	supplier (8)		147:18 148:11 150:20	thoughts (7) 5:9 13:22
121:12 135:6 144:12	150:18	study (3) 16:19 88:21	53:9,10,11,12 54:5		172:13,14,17,18,25	27:21 108:16,19 111:8
161:12 163:5,6 188:2	starts (5) 27:11 54:1	125:22	96:22 148:4 151:6		201:15,17,18,23	195:13
189:23 190:24	71:25 79:24 110:10	styrofoam (1) 37:18	suppliers (1) 5:20		202:1,2	thread (1) 127:18
specification (48) 12:12	stated (1) 122:16	subconsultants (1)	supply (6) 27:6 45:8		thanks (2) 65:25 82:23	three (6) 22:20 98:19
62:18,19,20,22 74:8	statement (29) 5:14	128:24	53:14 74:1 94:3 96:17		thats (65) 4:12 6:6 8:10	99:1 100:3 110:21
75:4,7 86:4,6,7 96:2	7:12 12:11 15:5,13	subcontract (11) 52:15	support (2) 126:5,18		9:21 11:9 17:24,24	131:5
115:4,8,12 133:14,20	16:2 36:3 49:4 53:19	141:4,24 142:8	suppose (1) 154:6		18:1 29:9 30:23 36:14	through (28) 3:14
134:20,25	55:22 57:2 58:4 59:13	143:5,6,10,22	sure (42) 4:13 12:4 14:2		45:22 54:10 56:14	4:4,8,9 6:3,7 10:11
135:10,12,18,25	107:11 120:24 123:5	144:4,8,17	16:22 18:1 19:2,15		58:24,25 62:19 65:8	24:15 39:16 45:6 75:7
136:6,6 141:11 144:24	131:22 140:6	subcontracting (1)	43:3 45:8,12 46:10		66:15 77:19 79:7 81:1	100:21 113:1 140:25
145:19,24 146:6,21,23	150:22,23 155:12	143:11	53:4 73:2 83:22 96:23		85:4 87:6 91:3	146:7 151:14 157:1
152:16 158:11 160:11	162:25 166:3,24	subcontractor (18) 12:9	102:15 111:6 114:1		93:13,13 99:15,15	167:22 173:17 174:24
166:9 167:16,20 168:6	168:12 170:7 171:6,8	18:15 19:8 20:20	116:2,4,4 124:7		104:20,21 105:8,16	181:19 190:11 193:11
173:3,12 174:9,20,25	186:18	62:18 63:15 107:16	128:25 130:17,21		106:8 111:16,18,22	194:23 195:19 196:25
178:9,20 179:16 198:3	statements (1) 130:7	112:3 139:2 141:5	135:8 143:25 147:13		115:10,18 119:23	197:1 199:19
specifications (2)	stating (1) 185:17	144:14,16 184:12,24	158:11 162:17 167:2		140:20 142:12,12	throughout (5) 2:5
145:17 174:16	statutory (1) 183:23	186:5 194:18	181:2 184:5,10 189:25		145:5,20 146:7 154:2	130:4 182:24 197:17
specified (7) 61:25	staying (1) 39:7	198:13,14	193:14 194:6		156:9 157:6 159:5	198:20
74:11,19 147:22	steel (1) 163:20	subcontractors (14)	196:8,14,22 197:2		163:25 171:8 176:10	throwaway (1) 30:14
					tease (1) 44:5	

thursday (4) 33:11	181:9,21 182:1 193:3	types (3) 3:23 21:14	184:12,12,13	wall (21) 9:2 12:14	152:23	141:6,6,8,22 142:6
155:1 157:14 178:8	tom (14) 60:7 79:24	173:21	188:5,6,11,18,21	20:16 72:5 73:6	white (1) 151:11	144:4,6,9,23 146:20
timber (1) 72:5	80:17 85:13 88:14	typical (4) 9:22 90:2	useful (3) 35:22 36:12	78:2,11,14 79:3	whoever (5) 45:12	151:11 152:25
time (103) 2:3 5:9	89:8 90:5,15 92:12	126:19,19	38:5	104:12,18 113:25	84:23 132:18 139:16	wouldnt (44) 4:12
8:2,9,17 10:19 12:25	93:22 97:22 98:7,8,24	typo (2) 104:20,21	usher (3) 127:8 172:11	116:21,24 117:10	185:25	7:18,23,23 9:14 13:21
13:12 15:24 16:15	tomorrow (9) 3:2 21:9		201:22	121:6 123:20 140:16	whole (15) 6:9 32:3	19:12,14 30:9 40:8
21:14 23:4,14 24:5	200:18,20,24	U	using (20) 23:25	183:7,8,9	52:1 66:12 80:5 88:18	55:12 78:19,20,21
28:25 31:2 32:4 41:9	201:7,12,21 202:3		24:1,18,24	walling (7) 94:2,3	98:10 99:4 100:7	81:9 85:15 97:7
42:9 44:1 48:9 52:20	too (4) 6:5 49:10 81:20	uk (1) 4:25	25:7,9,10,12 37:11	176:8,11,18 177:2	101:17 103:24 111:20	107:24 116:5 125:21
55:14 59:21 61:5	178:18	ultimately (7) 28:11	43:13,17 45:15 60:22	178:2	175:19 176:25 177:10	126:2,3,14 131:23,24
62:22 63:2 64:21	took (4) 28:24 83:16	33:5 147:9 154:20	70:4 88:24 96:21	walls (7) 71:25 113:14	whom (3) 18:10 107:16	138:22 139:4,9
68:15 73:12 75:11,23	124:24 177:14	192:12,24 194:19	100:15 102:9 112:16	182:11 183:15 191:16	186:6	147:6,12
78:6 81:24,25 84:13	topic (16) 39:7 40:10	unable (1) 172:6	155:2	192:20 193:20	whos (1) 92:25	149:12,14,19,21
85:21,23 87:22 99:23	44:23 53:13 59:8	unconvinced (1) 40:17	usual (4) 63:25 108:20	wanting (1) 78:7	wider (3) 36:21 38:4	151:24 153:1 164:9
100:17,23 103:2	63:19 65:8 74:3,4 75:5	underneath (1) 181:25	114:24 139:22	wants (1) 180:1	42:20	171:17 178:1,2
106:22 108:16 109:14	96:13 105:14 125:9	understand (35)	utilise (1) 95:17	warehouse (1) 136:20	williams (36) 26:22	179:17,18 195:23
111:6 112:5,14 114:11	129:4 140:2 197:9	4:13,23 7:20 8:1 20:10	uvalue (3) 78:1	warned (1) 201:7	27:13 29:14 39:10	198:14
117:8 118:2 120:15,24	topics (1) 103:11	30:8 36:2 39:23 45:24	104:6,13	warranties (1) 3:15	40:24 60:11,15	wouldve (1) 178:4
123:3,5,10,18	total (2) 19:18 101:17	48:13 59:2 73:10	uvalues (5) 77:4,12,13	wasnt (30) 18:5 19:13	65:10,14 66:23 69:15	wp (1) 128:10
125:18,22 126:6	totality (1) 103:9	86:17 109:15,17	78:5,8	23:22 30:13 31:22	72:16,20 73:11,16	write (1) 92:9
128:16 132:3 134:4,16	touch (2) 93:22 94:12	118:17 119:9,13		51:25 52:9,19 57:10	89:9 90:1,15 91:10	writing (4) 93:22 150:4
137:22,23 138:17	touched (2) 63:1 74:5	125:25 128:1 134:21	V	70:9 86:4,5 91:12	92:2,16 103:8 105:9	160:7 161:2
139:17,18,22 142:7,24	tower (35) 19:18 22:12	137:10,22 153:16	vaguely (1) 173:4	104:19 111:14,14,16	157:16 158:22 159:10	written (5) 47:10 73:2
148:16,17 150:11,19	37:24 38:15 53:15	156:8,20 159:15	valente (2) 105:10	114:3 127:23 139:6	160:3,16 166:14,19	144:15 147:4,8
151:2,17 152:9	54:5,9,16 56:1 58:22	160:16 165:14 170:15	157:17	147:16	173:11 174:15	wrong (9) 114:13
153:4,10 155:23	59:22 60:18 61:17	180:5 187:5,11 196:3	value (4) 23:14 32:23	152:15,19,23,23,24	175:16,25 177:5	155:13,17,24 171:11
159:15 163:15	62:15 74:12	198:17	69:4 129:23	167:6 183:19 185:1	178:13	180:11 194:5
164:17,20 177:20	75:6,11,22 92:24 94:4	understanding (25)	variation (1) 96:3	193:9	williamss (1) 166:16	195:18,24
178:25 181:23	101:17,17 132:18	7:14,22 8:1 13:18 24:5	variations (1) 14:15	waste (1) 194:15	willing (2) 199:8,9	wrongly (3) 163:24
182:15,22	133:2 138:3 141:1	30:15 36:6,6,8 48:20	varied (1) 128:19	watterson (7) 25:1	wind (3) 22:22	180:7,13
183:10,17,19 186:16	147:23 152:10 154:1	57:9,10,12 58:9 81:10	various (11) 3:23 5:2	26:6,20 27:12 29:14	176:12,21	
187:19 191:9,24 192:3	161:13 171:1 183:23	108:9,12 126:16	12:21 22:15,23 26:7	40:15 65:11	window (11) 32:21	yeah (41) 3:8 18:17
193:13 195:13 198:11	190:21 199:6,7	145:22 146:18 159:2	89:14 96:9 98:15	wattersons (2) 26:14	118:24 157:24 160:12	28:8 35:3 37:7 46:25
timeline (1) 192:2	town (1) 7:5	181:21 186:3 188:2	166:10 177:2	27:8	163:8 175:1 178:10	49:23 60:14 67:4
times (2) 125:2 168:16	tracing (1) 194:23	198:11	vary (1) 105:24	way (27) 6:17 10:8	181:19 183:18 189:1,2	70:17 71:3 73:8 76:19
timescale (1) 162:12	track (2) 125:13 129:1	understood (16)	vast (1) 41:22	11:11 44:15,16 73:4	windows (12) 53:3,4	79:12 105:8 108:23,24
timing (2) 86:20 111:23	trade (1) 150:18	6:22,23,25 16:1,23	ve (4) 25:18	79:19 85:2 98:9 99:4	106:19 120:6 134:10	124:16 125:21
tmo (20) 19:1,24 29:15	traffic (2) 125:17,23	28:5 48:14 81:7 85:16	32:22,23,24	104:4 114:24	157:21 158:1,15	126:2,14,24 128:19
30:11 32:5 33:4 34:13	trail (4) 6:10 62:1 88:20	91:2,23 112:21 132:7	ventilation (1) 181:16	115:1,2,21 120:11	159:3,6,16 179:3	130:8,20 134:1,5
39:10 68:12 71:16	162:18	168:24 169:4 177:11	verbally (1) 162:17	143:14,16 153:19,20	wished (2) 30:9,10	139:10,10,21 142:16
73:19 90:9 91:20	trails (4) 124:21,24,25	undertake (1) 141:21	verbage (1) 144:19	154:12 157:19 164:2	wishing (1) 82:10	147:9 149:19 153:6
119:19 145:23	126:15	undertaken (1) 23:13	verification (2) 159:10	171:21 173:17 176:4	witness (20) 1:9,11	154:10 157:2 167:19
159:2,16,24 168:12	training (1) 39:2	undertaking (1) 201:13	185:18	180:18	53:19 59:11 64:3,10	187:4,25 188:23 189:6
170:16	treatment (1) 162:15	unexposed (2) 12:23	159:3,17	ways (1) 186:4	127:2,6,15 150:21	year (4) 68:18 71:6
tmo000088718 (1)	trespa (2) 45:12 46:9	15:22	versa (1) 140:11	weakness (1) 182:13	155:11 162:24 166:3	95:16 113:1
168:11	tried (2) 44:14 90:8	unfair (2) 119:4,14	version (1) 101:13	website (1) 82:24	168:12 171:8	years (4) 31:12 43:24
tmo000088719 (1)	trigger (5) 112:24 123:9	unfortunately (1) 117:5	versions (1) 68:21	wed (3) 19:17 43:23	172:13,24	95:12 160:20
169:22	142:14 186:22 187:17	unique (1) 80:23	vertical (2) 106:18	46:8	201:10,15,17	yesterday (13) 1:18 4:4
tmo10005924 (1) 40:11	triggers (1) 131:16	units (1) 148:16	184:20	wednesday (3) 42:2	wm2k (1) 104:14	11:7 24:10 79:14
tmo100059242 (1)	true (1) 122:13	unless (7) 48:17 96:17	via (5) 3:1 26:16 45:17	66:5 202:6	wonder (5) 126:4 173:7	108:14 112:13,22
40:13	trust (1) 19:25	148:7 149:13 156:7	74:1 78:2	week (2) 98:6 103:10	177:16 178:25 185:21	115:25 157:23,23
tmo10012526 (1) 71:7	trusted (1) 124:18	171:17 200:20	32:22,23,24	wehrle (1) 65:2	wont (1) 95:14	185:6 198:9
tmo1001252610 (1)	try (7) 10:8 39:3 47:12	unlike (1) 41:23	ventilation (1) 181:16	welcome (1) 1:3	wool (14) 37:18	yet (3) 44:14 96:22
71:17	73:4 85:2 98:4 153:15	unlikely (3) 99:14	verbally (1) 162:17	went (5) 4:4 6:3 36:20	59:18,24 60:5,23 63:5	193:8
tmo1001252611 (1)	trying (12) 31:13	139:10,11	verbage (1) 144:19	53:7 108:6	80:3,19 81:6,17 84:22	youd (1) 2:7
71:17	36:14,25 37:7 48:13	unsafe (1) 57:7	verification (2) 159:10	werent (17) 11:2 28:23	87:18 89:17 91:21	youll (2) 36:6 130:22
tmo10041791179 (1)	66:10 69:3 85:18,25	unsolicited (1) 62:2	185:18	32:14 38:17 40:5 44:2	wording (3) 11:19 17:20	young (1) 26:7
146:8	86:1 92:19 180:5	until (5) 13:17 43:20	159:3,17	54:24,25 55:2,10	20:5	youre (33) 4:13 6:5
tmo100417912 (1)	tuesday (2) 1:1 56:15	149:6 171:1 202:5	versa (1) 140:11	64:24 68:13 100:10	work (22) 23:13,14,16	26:21 29:16
146:4	turn (26) 2:20,22 3:9	unusual (1) 185:22	version (1) 101:13	139:19 182:1,15 197:9	49:8,9,14 51:2 52:7,15	38:3,10,25 40:15
tmos (3) 34:20 119:17	6:6 22:7 24:11 39:4	upper (2) 176:7 178:17	versions (1) 68:21	weve (22) 13:11 14:3	59:15 69:24 89:12	50:16 57:15 64:1 67:9
161:17	44:23 53:18 60:12	used (55) 3:24 4:6 5:23	vertical (2) 106:18	18:19,24 19:9 21:5	93:1 100:18,22	85:25 86:1
today (8) 1:4 3:15	69:12 70:22 74:4	14:2 17:11 18:21	184:20	23:16 35:1,4 36:17	128:10,19,23 129:1	113:10,13,23 114:11
39:14 65:25 67:19	77:10 94:10 105:14	25:23,25 26:15 32:2	via (5) 3:1 26:16 45:17	38:13 59:3 62:17	174:5 198:1,7	116:12 117:15 120:15
164:17 200:9 201:25	115:3 117:13 125:8	38:14 41:23	74:1 78:2	69:23 71:4 75:16	worked (6) 8:15 19:19	122:8,22 145:2 157:18
today (1) 1:4	129:4 138:11 140:17	43:21,22,23 46:10	viable (3) 101:22	87:25 101:21 116:13	51:13,20 83:6 93:12	170:17,17 180:11
together (13) 32:18	146:4 157:11 172:3	54:5,9 58:6,8,18 59:24	102:13,20	118:16 134:19 146:25	working (5) 34:5 46:7	182:5 190:12 191:5
33:11 70:17 91:21	181:6	60:5,18 61:24 64:18	vice (1) 140:11	whatever (4) 31:13	69:21 152:24 173:17	194:12 195:1
94:8 121:18 136:5	turning (2) 65:6 73:12	70:14 72:11,15 73:5	views (2) 151:17,20	33:19 43:24 84:23	workmanship (1) 144:3	yours (1) 65:9
143:17 145:13 158:6	twothirds (2) 104:4	75:15,16 82:13 83:5	visible (1) 28:3	whats (4) 10:12 29:9	works (24) 50:22	yourself (11) 57:20
176:2,3 177:8	153:20	85:19 86:5 87:4,18	visit (2) 57:19 69:20	130:11 199:9	57:11,18 72:9 92:25	86:16 124:1,19 128:2
told (10) 13:7 60:17	type (3) 69:21 122:20	88:17 96:14 99:14,21	visiting (1) 57:25	whereas (1) 151:23	101:23,25,25 104:17	
91:10,13 107:6 151:10	136:15	121:5 142:22 151:14	visual (8) 35:14,15 37:5	whilst (3) 96:19 100:9	110:25 111:11 128:20	
		162:9 170:1	152:1			
			voids (1) 182:9			
			vs (1) 66:2			
			W			
			waiting (1) 158:1			
			wales (2) 7:10 16:12			
			walked (2) 138:20			
			149:13			

154:7 155:5,6 159:23 171:15 184:9 yourselves (3) 31:25 94:1 96:1 youve (2) 193:3 194:15 ysr (1) 35:25	126259 (1) 68:7 127 (2) 121:3 154:17 1279 (1) 114:22 130 (1) 173:21 135 (4) 80:22 89:20 130:2 154:8 1350112002 (1) 14:25 135012002 (1) 15:4 15 (1) 103:7 150mil (1) 189:16 159 (1) 5:15 16 (6) 40:14 89:7,9,22 90:20 92:2 160 (1) 104:18 1603 (1) 114:11 160mm (1) 104:12 17 (3) 71:21 105:18 106:11 1716 (1) 2:23 179 (1) 146:8 18 (16) 56:16 60:8,16 75:22 92:9 95:6 110:10 114:11,14 121:4,20 129:17 130:3,18,25 156:11 1822 (1) 3:12 186 (1) 166:5 18793150 (1) 101:17 18m (1) 154:19 19 (1) 169:22	2015 (12) 133:18,25 136:12 148:1,4,12 151:4 152:6 171:7 184:16 190:11 196:1 2016 (1) 151:4 2017 (1) 64:16 2020 (2) 1:1 202:6 205 (1) 174:5 20yrs (1) 36:1 21 (3) 1:1 24:11,13 22 (5) 3:23 45:1 133:18 136:12 202:6 220 (1) 178:9 23 (9) 1:21 2:4,10 3:11 21:6 56:12 65:9 68:22 165:21 24 (4) 21:11 47:5 96:7 101:5 241 (1) 144:2 25 (3) 95:12,16 101:4 26 (3) 106:13 144:13 148:1 27 (2) 55:22 196:1 28th (1) 152:8 29 (1) 49:5 2b (1) 146:9	51 (6) 55:21,23 57:3,4 59:14 155:11 520 (1) 134:9 55 (9) 3:5 54:15 55:18 88:25 100:15 150:25 151:3 173:14 181:8 57 (1) 174:3
Z			6
zac (1) 82:22 zak (17) 67:25 68:17 79:23 80:4,17 81:3,5,9 82:19,20 83:20 87:3 88:14 90:4 96:8 97:10 101:4 zero (1) 74:20 zinc (26) 22:8 23:5,8,15,19 24:1,2,4,17 25:17 29:21,24 30:1,7,14,21 31:4,12 32:20 33:3 40:3 42:22 43:1 76:7,13 95:23	2		6 (6) 7:11 15:16 27:11 29:13 162:10 175:8 60mins (1) 191:19 61 (3) 14:19,21 15:16 62 (1) 15:7 63 (1) 15:15 64 (1) 16:7 65 (1) 16:17 66 (1) 181:13 68 (1) 178:7 69 (2) 175:3,4
0			7
0 (26) 7:9,16 8:1,2,6,9,18 9:10 15:11,17,23 16:2 35:25 36:4,7,13,24 38:23 43:19 120:19,23 121:13 122:11,13 123:6 130:4 0021wmk (1) 129:23 015 (1) 104:14 05 (1) 12:15 06 (1) 114:22 084582 (1) 153:22			7 (2) 22:22 115:19 776 (2) 74:9 146:24
1		3	8
1 (43) 3:10 9:1,20,25 12:12,20 15:12 16:14 24:9,10 26:21 27:3,17 29:2 47:6 65:13 71:19 72:9 76:7 80:23 82:17 89:6,8 92:8 96:11 106:11 114:24 116:11,12 117:14 121:21 122:4,10 129:7,9,19 140:23 142:12 144:22 152:7 195:3 203:3,4 10 (14) 71:17,20,22 72:1 80:1,5 82:19 91:14 148:12 150:25 151:3 201:12 202:3,5 100 (3) 85:24 127:11 170:11 1000 (1) 1:2 101 (1) 170:21 103 (2) 59:12,16 11 (3) 71:17 72:1 83:21 1120 (1) 64:6 1135 (3) 64:2,5,8 12 (6) 29:3 55:24 96:10,12 157:17 160:4 120 (3) 114:22 194:12,13 1204 (1) 82:21 1206 (1) 82:22 12060 (1) 194:15 120mins (1) 191:18 125 (1) 101:18	2 (30) 3:21 15:16 17:10 18:3 24:11 27:9,10,11 40:13 69:13 72:11 77:6 80:15 89:6,8 96:11 97:21 110:9,10 113:8 121:22 127:5,10 140:22 141:17,25 143:2,3 146:5 153:18 20 (4) 95:5,8 126:20,21 200 (1) 127:13 2000 (1) 15:19 2005 (1) 11:3 2006 (1) 49:21 20062007 (1) 19:20 200798 (1) 68:8 2008 (1) 55:15 2009 (1) 49:21 200mil (1) 189:16 2010 (5) 49:25 50:1,4 54:4 58:2 2011 (5) 50:1,4 58:3 142:12,22 2012 (3) 55:24 56:12 136:19 2013 (3) 75:22 115:19 152:8 201314 (1) 142:13 2014 (48) 2:4,10 3:11 21:6,11 22:11 24:9,10 26:21 28:16 29:13 39:11 40:14 45:1 47:5 60:8 61:16 65:9 68:17 69:13 70:25 71:15,21 78:6 79:17 80:1,5,16 82:19 89:7,9 95:8 97:21 99:13 101:4 103:3,7,21 105:18 106:11,13 114:11 121:20 129:9 156:19 157:17 160:4 165:21	3 (13) 9:20 11:10 27:8,10 72:12 110:7,9,14 115:18 131:8 162:10 167:12 184:16 30 (4) 22:11 35:25 152:6 190:16 300mil (1) 189:16 305 (2) 172:19 176:15 30min (1) 184:21 30minute (1) 186:10 310 (1) 175:6 320 (3) 172:11,16,21 325 (1) 176:11 33 (3) 120:1 181:25 182:2 34 (1) 183:8 342 (1) 167:25 346 (1) 22:22 362 (1) 77:11 376175 (1) 24:14 390 (1) 107:11	8 (6) 28:16 32:11 39:11 42:12 68:17 144:1 80 (2) 85:24 137:21 8414 (6) 132:21 133:4 137:11 138:1 153:22 154:9 84142200s (1) 130:1
		4	9
		4 (11) 72:14 73:23 77:10 80:1,16,23 140:17 148:4 154:11 167:12 199:13 400 (1) 202:4 45 (1) 140:5 46 (2) 53:20 54:11 47 (1) 176:9 476 (2) 130:5 137:10 47661989 (1) 15:10 47671997 (1) 15:12 49 (2) 58:5 148:16	9 (1) 120:1 90 (1) 190:16 9030 (3) 190:25 194:14,15 90min (1) 184:21 90minute (1) 186:10 91 (2) 181:25 182:5 9165 (1) 136:19 93 (2) 183:2 189:10 95 (1) 168:13 96 (2) 148:2 168:20 98 (1) 169:8 99 (1) 169:22
		5	
		5 (4) 14:18 56:22 167:12 181:12 50 (1) 31:12 5000 (1) 14:23	