

OPUS 2

INTERNATIONAL

Grenfell Tower Inquiry

Day 76

November 24, 2020

Opus 2 International - Official Court Reporters

Phone: +44 (0)20 3008 5900

Email: transcripts@opus2.com

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

1 Tuesday, 24 November 2020
 2 (10.00 am)
 3 SIR MARTIN MOORE-BICK: Good morning, everyone. Welcome to
 4 today's hearing. Today we're going to continue hearing
 5 evidence from Mr Meredith.
 6 So would you ask Mr Meredith to come back in,
 7 please.
 8 MR IVOR MEREDITH (continued)
 9 SIR MARTIN MOORE-BICK: Good morning, Mr Meredith.
 10 THE WITNESS: Good morning.
 11 SIR MARTIN MOORE-BICK: All ready to carry on?
 12 THE WITNESS: Yes.
 13 SIR MARTIN MOORE-BICK: Very good, thank you very much.
 14 Yes, Ms Grange.
 15 Questions from COUNSEL TO THE INQUIRY (continued)
 16 MS GRANGE: Yes, thank you.
 17 Good morning, Mr Meredith. Yesterday when we broke
 18 off I was asking you about the first issue of the
 19 BBA certificate that was dated 27 October 2008, and
 20 I now want to move to the amended issue 1 of that
 21 certificate from April 2010. If we can bring that up,
 22 it's at {BBA00000037}, and if we look in that bottom
 23 left-hand corner of the page again, we can see it says
 24 "Date of First issue: 27 October 2008", but underneath
 25 that in smaller text it says:

1

1 "Certificate amended on 6 April 2010 with revisions
 2 made to Scottish Building Regulations ..."
 3 Do you see that there?
 4 A. Yes.
 5 Q. So this was issue 1 of that certificate.
 6 We can see on page 1, if we go up the page, it's
 7 under "Key factors assessed" again, and we've got its
 8 fire performance there, "Behaviour in relation to fire",
 9 three headings down. It says there again:
 10 "The boards will not contribute to the development
 11 stages of a fire. The product has been tested to
 12 BS 8414-1 ... for one specific construction on masonry
 13 walls ..."
 14 Do you see that there?
 15 A. Yes.
 16 Q. So that was a change.
 17 If we go on to section 7 on page 5 {BBA00000037/5},
 18 there we see "Behaviour in relation to fire", and if we
 19 look at section 7.1 under that, it says:
 20 "The product is classified as Class 0 or 'low risk'
 21 as defined in the documents supporting the national
 22 Building Regulations. The product, therefore, may be
 23 used in accordance with the provisions of:
 24 "England and Wales - Approved Document B,
 25 paragraph 8.4, Volume 1 and paragraphs 12.5, 12.6 and

2

1 12.7, Volume 2 (see also Diagram 40)."
 2 Do you see that there?
 3 A. Yes.
 4 Q. Now, K15 could never comply with or be used in
 5 accordance with the requirements of paragraph 12.7 of
 6 Approved Document B, could it, because it's not
 7 a material of limited combustibility?
 8 A. I'd have to see 12.7 if I was to comment on that.
 9 Q. Okay, we can take you to that. I think it might be
 10 {CLG00000224/96}. There we have 12.7 of ADB:
 11 "In a building with a storey 18m or more above
 12 ground level any insulation product, filler material ...
 13 used in the external wall construction should be of
 14 limited combustibility ..."
 15 Do you see that?
 16 A. Yes.
 17 Q. So, looking at that, would you agree that K15 could
 18 never comply or be used in accordance with that part of
 19 ADB?
 20 A. Not with section 12.7, no.
 21 Q. Exactly.
 22 A. You'd have to source the alternative route to
 23 compliance.
 24 Q. Yes.
 25 Can you help us as to who suggested that wording and

3

1 how it got into that certificate? We don't currently
 2 understand that at the moment. We can't see that from
 3 the documents. Are you able to help?
 4 A. This is the word -- can I look at the BBA certificate --
 5 Q. Yes, let's go back to that on page 5 {BBA00000037/5}.
 6 So it's the wording under 7.1:
 7 "England and Wales ..."
 8 So before that it said:
 9 "The product, therefore, may be used in accordance
 10 with the provisions of ..."
 11 And it's got various paragraphs in Approved
 12 Document B.
 13 A. The BBA would normally -- we would present them with the
 14 test information, and they would come back with
 15 a certificate. We would then proof it but, because the
 16 BBA were experts, we would pretty much leave them to
 17 their own devices. We would comment where we saw fit,
 18 and try to sort of direct them towards the areas that we
 19 wanted the product to be used, but at the end of the day
 20 it was their call, so we had to live with whatever they
 21 were going to put in writing.
 22 Q. But if they'd put something in here that's patently
 23 incorrect like that there, 12.7, implying it's of
 24 limited combustibility, surely it was important that
 25 Kingspan went back to the BBA and said a mistake's been

4

1 made?
 2 A. But it's also referring to sections 12.5, which is the
 3 one with the alternative route to compliance --
 4 I appreciate what you're saying about 12.7, yes.
 5 Q. Yes, yes.
 6 A. But because it's referring to 12.5, you know, I think
 7 that was an oversight. If 12.7 was there on its own,
 8 then ... but because it was stuck next to 12.5 and
 9 12.6 ...
 10 Q. I see. You say this is a --
 11 A. -- thought it was looked at sort of holistically .
 12 Q. Okay. So you say this is an oversight on Kingspan's
 13 part, do you?
 14 A. We would not proof the ... we would only proof it for
 15 the purposes of marketing reasons and make sure that our
 16 test evidence was presented correctly. We were not
 17 a specialist in the Building Regulations, although we
 18 would read them as much as we could --
 19 Q. But you knew full well -- we've seen emails where you
 20 have written about it -- about the requirement for
 21 limited combustibility and the alternative route, and
 22 you knew full well that K15 couldn't satisfy that
 23 limited combustibility requirement.
 24 A. Yeah, I would say that that was an oversight on our
 25 proofing.

5

1 Q. Okay. Well, let's move on because we're going to come
 2 to something similar in a moment in another certificate .
 3 I just want to put to you that this is wholly misleading
 4 and that it ought to have been corrected, if not by the
 5 BBA, then certainly by Kingspan.
 6 Can we also look at 7.2 here, underneath "Scotland".
 7 It says:
 8 "In buildings with a floor more than 18 m above
 9 ground level, advice should be sought from the
 10 Certificate holder."
 11 Do you see that?
 12 A. Yes.
 13 Q. Now, would you agree with me that Kingspan very much
 14 welcomed clauses like that in these certificates ,
 15 because it meant that people would contact them about
 16 whether or not it could be used over 18 metres and give
 17 you an inroad into selling the product on particular
 18 projects; would you agree with that?
 19 A. Certainly, yes.
 20 Q. Can you help us as to when this certificate was actually
 21 published and circulated for use? Can you recall that
 22 being the case?
 23 A. It would say on the front of the certificate .
 24 Q. Yes, I mean, we can see the dates on the front, but we
 25 just wondered --

6

1 A. As soon as a -- they're on the BBA website. I think
 2 maybe the Kingspan website links into the BBA website
 3 for the --
 4 Q. Yes.
 5 A. It should do, anyway.
 6 Q. Okay. Let's look at an email chain --
 7 SIR MARTIN MOORE-BICK: Sorry, before we leave that
 8 document, can I just ask your help on one question.
 9 If you look at paragraph 7.5 of the certificate --
 10 A. Yes.
 11 SIR MARTIN MOORE-BICK: -- it refers to the tests
 12 undertaken, and the BS 8414-1 test for a masonry
 13 substrate; yes?
 14 If you go to the first page of the certificate
 15 {BBA00000037/1}, what's pictured there is what? Can you
 16 just tell us what we see in that picture?
 17 A. That would be an insulant on a steel frame system.
 18 SIR MARTIN MOORE-BICK: So it's not representative of what
 19 the certificate purports to cover, is it?
 20 A. It's not representative of the tested evidence for that
 21 specific test, yes, that's correct.
 22 SIR MARTIN MOORE-BICK: So my question is: do you know how
 23 that came to be portrayed on the front of the
 24 certificate ?
 25 A. That would have been a standard image that would have

7

1 come from our marketing department.
 2 SIR MARTIN MOORE-BICK: Right. Thank you.
 3 A. I think it's the standard image that's used on the front
 4 of the K15 literature .
 5 SIR MARTIN MOORE-BICK: All right. Thank you.
 6 MS GRANGE: I see. But do you remember ever noticing that
 7 that image was for a steel frame, when you knew that the
 8 only 8414 relevant data came from a masonry test?
 9 A. Because the goal was to do it onto a steel frame
 10 eventually, I don't think I really considered -- well,
 11 it was considered an issue at the time.
 12 Q. Right.
 13 If you look in the text, actually, immediately to
 14 the left of that image, we can see under "Product scope
 15 and summary of certificate" it says:
 16 "This Certificate relates to Kooltherm K15
 17 Rainscreen Insulation Board, a rigid phenolic board with
 18 foil composite facings, for use as thermal insulation on
 19 new and existing steel frame or masonry walls."
 20 Do you see that there?
 21 A. Yes.
 22 Q. Let's move on to an email chain now about the
 23 BBA certificate from November 2012. This is
 24 {KIN00009353}. So this is later in time now,
 25 November 2012.

8

1 If you look at the very bottom email in the chain on
2 page 5 {KIN00009353/5}, it's an email from Mandy Osman,
3 who was the administrator from the BBA, to Gareth Mills
4 on 5 November 2012, attaching a draft revised
5 certificate for K15. You can see that in the first
6 paragraph:

7 "We attach for your approval, a draft of the
8 proposed Certificate which is to be sent to the
9 Regulatory Authorities and our Technical Assessors for
10 comment.

11 "The purpose of you seeing the draft now is to
12 satisfy yourself that circulation would not result in
13 confidential information being divulged to a
14 third party. This is also your opportunity to comment
15 and request revisions."

16 Do you see that in the second paragraph?

17 A. Yes.

18 Q. So she sends that there.

19 The next email I want to show you is on page 2
20 {KIN00009353/2}. We can see that Mandy Osman is still
21 chasing on 3 January 20013.

22 A. Okay.

23 Q. Do you see that there?:

24 "Dear Mr Meredith

25 "Please may we have your approval of the Draft

9

1 Certificate to enable us to maintain progress.

2 "Yours sincerely

3 "Mandy Osman."

4 So she is still chasing in January 2013, having sent
5 the revised certificate in November 2012.

6 Now, you said something yesterday to the effect that
7 often you would only have a very short period of time to
8 check these certificates, say 24 hours. What the
9 documents appear to show is that, in fact, often you
10 have months to check these certificates and go back to
11 the BBA with any comments, and there's often very
12 protracted exchanges with the BBA about these
13 certificates.

14 Looking at that now, would you agree? Does that
15 prompt your memory on that?

16 A. I was under the impression that I wasn't actually
17 directly responsible for the BBA at the time. I had
18 been previously. And I believe this might have been
19 something that just got lost in my mailbox. I had
20 an unfeasibly large amount of emails that I was trying
21 to juggle.

22 Q. I see, yes.

23 A. So this could have been an oversight of mine or it could
24 have been something that I forwarded to Gareth to try
25 and get him to sort, or I may have just missed it.

10

1 Q. Yes, I see.

2 A. It wasn't a deliberate delay by any means, because the
3 K15 certificate was -- it was important.

4 Q. Yes.

5 Can we look at the top email in this chain
6 {KIN00009353/1}, and a response to Joel Clarke that you
7 send on this topic on Friday, 4 January 2013. You say
8 this:

9 "As Gareth has the experience on what we can and
10 cannot get away with we need to take the lead from him
11 and perhaps sit down and work out our approach
12 ASAP.

13 "Gareth - have you drafted anything to the BBA
14 reference this draft that can be circulated?"

15 Do you see that there?

16 A. Yes.

17 Q. Can you explain your comment there about "what we can
18 and cannot get away with"?

19 A. What they will accept with regards to changes. I wasn't
20 really au fait with Mandy Osman or, I think, George Lee,
21 who was the main contacts on this certificate. So,
22 you know, Gareth had been working with them.

23 Q. Would you agree that that language suggests that you're
24 somehow trying to get away with something in the
25 certificate that perhaps you shouldn't?

11

1 A. Yeah, I will admit we're -- Kingspan were moulding the
2 certificate at the time to meet the needs, to make
3 sure -- and we would have to do that with any
4 certificate, to make sure it covered the markets that we
5 were in.

6 Q. What I'm going to suggest to you is that, far from any
7 of this wording ever being an oversight, in fact the
8 wording was always very carefully checked by Kingspan,
9 and they pushed as hard as they could to get the most
10 favourable wording for its sales of its product; would
11 you agree with that?

12 A. I would agree that it was always the case that -- the
13 BBA certificate was intrinsic to any sales, so it was
14 very important that the text within it was suitable for
15 the marketplaces we were in. So, yes.

16 Q. But it's more potent than that, isn't it? It's that
17 you're trying to push the BBA as far as possible to say
18 things that are going to maximise the sales of K15, even
19 if they're not true. That's right, isn't it?

20 A. That's what we were doing, yes.

21 Q. Yes.

22 Can we go now to another email chain. This is
23 {KIN00005572}, which is a very long chain running from
24 5 November to 14 January 2013. The chain starts with
25 the same email we have been looking at from Mandy Osman

12

1 attaching the draft and then her chaser. Then the email
2 I want to ask you about is on page 4 {KIN00005572/4},
3 and it's sent by Joel Clarke to you, copying in
4 Tony Millichap and Gareth Mills, on 9 January 2013 at
5 16.06. That's the day after a review meeting appears to
6 have taken place with the BBA on 8 January 2013.

7 Now, if we look at this email, Joel Clarke says to
8 you:

9 "Sorry, perhaps I wasn't clear. I'm fully aware we
10 want it as open and delimiting as possible (that's
11 blindingly obvious, is it not?) - however, on the basis
12 of some of the comments flying around yesterday my first
13 thoughts are that we are not going to have it put back
14 to how it was by butting heads. I don't even think
15 they'll give us the get-out of 'contact the
16 manufacturer'. The phrase used more than once yesterday
17 was 'they're onto us'. Even if being used in a
18 tongue-in-cheek way (we're not doing anything immoral or
19 illegal after all) it does perhaps reflect the position
20 we are in.

21 "If, worst-case, we have to let them say in small
22 letters that anything other than 60mm should be
23 'assessed' then we need an 'assessment' of suitable
24 weight and there is no real problem. Where are we with
25 LABC Type Approval? Would that not do it?

13

1 "I'd love it back how it was but feel it unlikely,
2 that's all."

3 Do you see that there?

4 A. Yes.

5 Q. Now, in the light of your previous answers, I think you
6 would agree with this: it was blindingly obvious, wasn't
7 it, that Kingspan wanted the certificate as open and
8 delimiting as possible?

9 A. Yes, that's correct.

10 Q. And what was meant by "they're onto us"? Had you
11 attended the meeting with the BBA the day before, and do
12 you recall getting the impression or it being said that
13 the BBA were onto you?

14 A. I'm not sure if I was in attendance at that meeting.

15 Q. But it suggests, does it not, that the BBA have perhaps
16 realised that the previous issues of the
17 BBA certificate --

18 A. Yeah, aren't suitable anymore.

19 Q. -- aren't suitable?

20 A. Yes.

21 Q. Were never suitable, were they?

22 A. They weren't suitable based on the test evidence that we
23 had.

24 Q. We also see that the BBA appeared to have decided to put
25 an end to the "get-out", as he calls it, of the "contact

14

1 the manufacturer for advice" clause. I showed you that
2 in 7.2 of the last certificate, where it said for
3 buildings over 18 metres, contact the manufacturer.
4 That was a get-out because it allowed Kingspan to have
5 direct contact with industry professionals and open the
6 door to Kingspan's sales pitch, didn't it?

7 A. Yes.

8 Q. What was your response at the time, do you remember
9 having a response, to the phrase he uses where he says
10 "We're not doing anything immoral or illegal after all"?
11 Do you remember that, noticing that, and what was your
12 response to it?

13 (Pause)

14 A. I can't remember what I would have said at the time, but
15 I think we were uncomfortable with our situation.

16 Q. Yes.

17 Let's look at another chain of correspondence from
18 nearer the time a further amended version of the
19 certificate was issued. This is at {KIN00005870}. If
20 we go to the second page, we can see an email from
21 Mandy Osman of the BBA, sent on 6 December 2013 to
22 Gareth Mills attaching a revised copy of the final draft
23 of the BBA certificate.

24 Moving up to the next email, we see that
25 Gareth Mills forwards the final draft to Joel Clarke and

15

1 to you on 9 December. That's right at the bottom of
2 that first page. He says:

3 "Copy of an updated draft ... which came through on
4 Friday. I've not had a chance to look over it yet ..."

5 Looking now at the next email up, sent the next day
6 by Joel Clarke to Gareth Mills and to you, we see that
7 he says this:

8 "Just been going through this. The first paragraph
9 is now exactly as it used to be, which is very good
10 news. Both versions attached for easy reference.

11 "There is a mention of some potential restrictions
12 at 8.2 and 8.3 as per the following."

13 Then he sets those out:

14 "(8.2) ... 'The test result relates only to this
15 specific construction and a separate test would be
16 required to establish the performance of any other
17 combination of materials.'

18 "(8.3) 'The product incorporated in the construction
19 defined at section 8.2 can be used in buildings with
20 a floor more than 18m above ground level. Fire breaks
21 should be used at every floor level after the first
22 floor.'"

23 Then he says:

24 "Given that the note at 8.2 is in the smallest
25 possible font and buried deep in the certificate itself

16

1 we have made significant progress when compared with the
2 last draft.

3 "The wording at 8.3 could be read as a restriction
4 but logically -speaking it does not preclude the use of
5 other thicknesses ...

6 "Personally I believe this certificate is now
7 acceptable, at least insofar as it is much less
8 restrictive than it was and I do not believe we will get
9 any joy in trying to have this last restriction removed.
10 Happy to take on board comments though before going back
11 to BBA."

12 Do you see that there?

13 A. Yes.

14 Q. Now, in the light of the answers you have given, would
15 you agree with me that that email typifies the approach
16 that Kingspan were taking at the time, which was to get
17 away with as much as possible in their dealings with the
18 BBA over the language of the BBA certificate?

19 A. Yes, that's correct.

20 Q. And to bury any wording that was adverse to Kingspan's
21 commercial interests, as far as possible, into the
22 smallest font and deep into the certificate?

23 (Pause)

24 A. I mean, that wasn't a direction from myself. Joel was
25 acting under his own steam with respect to that. But it

17

1 was -- he was meeting what we were wanting for that
2 certificate, yes.

3 Q. Did you ever discuss this with Tony Millichap, this
4 approach to BBA certificates?

5 A. I think all our line managers were au fait with the back
6 and forth we had to do to get a certificate.

7 Q. And they were condoning this behaviour; was that your
8 understanding?

9 A. When put in black and white, it looks quite shocking,
10 but ... yes, I believe so.

11 Q. Yes, they condoned that behaviour?

12 A. Yes.

13 Q. Do you ever remember any of your line managers or anyone
14 else at Kingspan saying, "We need to play straight with
15 the BBA, we need to be open and transparent with them,
16 because this is a matter of life safety, fire safety"?
17 Do you ever remember having that conversation?

18 A. I don't remember that, no.

19 Q. Yes.

20 Now, do you recall it was you that signed the
21 contract with the BBA prior to these certificates being
22 produced? Do you remember that?

23 A. This was maybe into, what, 2006 or something like that.

24 Q. Let's look at that. It's at {BBA00010745}. It's
25 actually 4 August 2004. If we go at the bottom of

18

1 page 4 {BBA00010745/4} of this certificate with the BBA,
2 we can see there the date, and is that your signature?

3 A. Yes, that is.

4 Q. "Signed on behalf of the Applicant."

5 A. Yes.

6 Q. Did you ever read that contract and check what your
7 obligations were of disclosure to the BBA during the
8 time you were dealing with K15?

9 A. I don't believe I read it after I signed it, no.

10 Q. Did anyone else ever go back and check what the
11 obligations were to the BBA in terms of disclosure?

12 A. Not that I'm aware, no.

13 Q. Were you aware that you had to immediately notify the
14 BBA of any change in the particulars supplied to the
15 BBA, and also of any new or additional information
16 concerning the subject or its suitability? We see that
17 on page 3 {BBA00010745/3}, if you want to look at it.

18 A. Where's the clause? Yes.

19 Q. Page 3, (g), one paragraph up from the bottom on the
20 left-hand side:

21 "Immediately notify the BBA of any changes change in
22 the particulars supplied ... or any third parties and
23 also of any new or additional information concerning the
24 Subject or its suitability for the Specified Use
25 including, without limitation to the generality of the

19

1 foregoing, details of claims by users of the Subject
2 that it is or may be unsatisfactory for the Specified
3 Use ..."

4 Did you ever tell the BBA about the failed tests in
5 2007 and 2008 and the poorer performance in fire of the
6 new technology K15?

7 A. The reason I wouldn't -- we wouldn't have told them
8 about the failed test in 2008, although I think
9 somebody -- I remember inviting the BBA along to a test,
10 they witnessed a failed K15 test. I don't -- sorry,
11 could you rephrase the question, please?

12 Q. Yes. Did you ever tell the BBA about the failed tests
13 in 2007 and 2008 and the worse fire performance of the
14 new technology K15 that you saw in those tests?

15 A. Okay, the tests in 2008 were owned by Sotech primarily,
16 so it wasn't our -- it wasn't Kingspan's responsibility,
17 it wasn't ... it wasn't -- the information wasn't owned
18 by Kingspan.

19 Q. But couldn't you have gone --

20 A. Also -- sorry. Also the failure, although, yes, I was
21 shocked by it, I didn't completely attribute it to the
22 insulation in isolation. There was an effect of the
23 cladding panel, because it melted and it floated in
24 front of the system --

25 Q. Yes.

20

1 A. -- allowing the fire to leap up the fire barrier.
 2 Q. But we looked at this yesterday, the BRE comments that
 3 they made, they did have a concern about the K15
 4 continuing to burn, didn't they?
 5 A. Yes --
 6 Q. Yes.
 7 A. -- definitely .
 8 Q. And even if that information with Sotech, the test
 9 information, all the detail of it was confidential, why
 10 couldn't you have gone to the BBA and said, "Look,
 11 I can't give you the full detail because it's
 12 confidential to another party, but what I can tell you
 13 is we've changed the technology of our foam, it now has
 14 perforations in the foil, and it's performing worse in
 15 fire"? You could have done that, couldn't you?
 16 A. We were striving to solve that problem before it came to
 17 a head, so yes, it could have been done.
 18 Q. But you were desperately hoping that something else --
 19 A. But we were hoping to have resolved it before it became
 20 an issue.
 21 Q. Yes. You were hoping something else might come along
 22 that would give you the justification --
 23 A. Yes.
 24 Q. -- for the product you were selling?
 25 A. Definitely .

21

1 Q. Can we now look at the LABC and their registered details
 2 and system approval for K15.
 3 You were asked in your witness statement what the
 4 purpose was of seeking an LABC registered details
 5 certificate. If we look at your response, this is at
 6 your witness statement, {KIN00022312/39}, and at
 7 paragraph 83A towards the bottom of that page, you're
 8 asked that question:
 9 "... what was the purpose of obtaining an LABC
 10 Registered Details certificate ..."
 11 And the answer you give is:
 12 "LABC acceptance with a Registered detail is a quick
 13 way of securing Building Control acceptance. Thus it
 14 was a no brainer to seek out such a document."
 15 Do you see that there?
 16 A. Yes.
 17 Q. So it was a very important document, wasn't it, when
 18 getting K15 accepted for use on high-rise buildings?
 19 A. Yes, without a doubt.
 20 Q. Let's look at the first system approval certificate
 21 which was obtained for K15 in May 2009. If we go to
 22 {KIN00005705}, this is the system approval certificate,
 23 and we can see it's been granted to the certificate
 24 holder, which is Kingspan, and under the system title,
 25 we can see it says:

22

1 "Description: Kingspan Kooltherm K15 Rainscreen
 2 Board."
 3 Do you see that there?
 4 A. Yes.
 5 Q. Under the conditions in section 5 on this page, it's
 6 valid for three years. Do you see that in the yellow
 7 highlighting?
 8 A. Yes.
 9 Q. Then in the fourth page {KIN00005705/4}, under the
 10 heading "Requirement B - Fire Safety" -- so this is
 11 a document which appears at the back of the certificate,
 12 "Requirement B - Fire Safety Considerations", and it
 13 says:
 14 "K15 has been tested in accordance with ..."
 15 And there is a list of four British Standard test
 16 methods, and we can see there we've got BS 8414-1:2002,
 17 and then you've got a fire resistant test, and then
 18 you've got BS 476-6 and 7, the national class 0 tests.
 19 Then it says this underneath, it says:
 20 "From the results, it can be considered as
 21 a material of limited combustibility and meets the
 22 criteria for Class 0 classification for surface spread
 23 of flame."
 24 Do you see that there?
 25 A. Yes.

23

1 Q. Now, just looking at that sentence now, do you agree
 2 that the most natural reading of that is that K15 can be
 3 considered to be a material of limited combustibility?
 4 A. I've seen this terminology used quite a bit when looking
 5 at alternative means to compliance, because they say if
 6 you satisfy the alternative means to compliance test,
 7 you can be considered a material of limited
 8 combustibility, therefore be used in the same scenario
 9 as.
 10 Q. Who said that?
 11 A. I've seen that in an insurance document going back,
 12 an LPCB document.
 13 Q. But it's not what Approved Document B says, is it?
 14 Approved Document B has very specific tests for
 15 a product to be of limited combustibility, and it's --
 16 A. Yeah, no, certainly, there's the limited combustibility
 17 test, which obviously prevents you having to do any
 18 other testing.
 19 Q. Yes.
 20 A. But if you did the other testing -- what they're doing
 21 is putting limited combustibility side by side with
 22 a BS 8414 test there.
 23 Q. But it --
 24 A. But it is badly worded and it's misleading, definitely.
 25 Q. Yes, and BS 8414 testing can't transform a combustible

24

1 product into one of limited combustibility, can it?
 2 That's not what's said in Approved Document B, is it,
 3 anywhere?
 4 A. But what they're saying is it can be considered the same
 5 as, it can be considered at the same level.
 6 Q. But that's just utterly wrong, isn't it? BS 476-11
 7 testing and testing for A1 or A2 Euro testing, that's
 8 what you get with your limited combustibility, are much
 9 more onerous tests, aren't they?
 10 A. Yeah, they're small-scale tests whereas the 8414 is
 11 a large-scale test.
 12 Q. And Kingspan knew, didn't it, all along that K15 was not
 13 a material of limited combustibility; on the contrary,
 14 it was a combustible insulation, wasn't it?
 15 A. Yeah. Definitely.
 16 Q. Do you agree that this statement is fundamentally wrong
 17 and misleading?
 18 A. It's very misleading, yes.
 19 Q. Yes.
 20 What was your reaction when you saw that the
 21 certificate stated that K15 can be considered as
 22 a material of limited combustibility? What did you
 23 think when you saw that?
 24 A. I think I couldn't believe it was written.
 25 Q. And did you talk to anybody about that? Did you discuss

25

1 it with your line manager and say, "There's obviously
 2 been a mistake here, this can't be right?"
 3 A. I don't think I was directly responsible for this
 4 certificate. I'm sure we would have had that
 5 conversation, yes.
 6 Q. So because someone else was responsible, you didn't
 7 think it was for you to say, "That's simply wrong?"
 8 A. I was buried in work, you know, if it wasn't my direct
 9 responsibility, then I -- you know, I'd very rarely get
 10 the time to even read such things.
 11 Q. Right.
 12 Let's look at page 5 {KIN00005705/5} of the
 13 certificate, and we see a section headed
 14 "Requirement B4; External Fire Spread", at the top of
 15 that page, and it says this:
 16 "Since K15 can be considered a material of limited
 17 combustibility, it is suitable for use in all situations
 18 shown on Diagram 40 of Approved Document B Volume 2,
 19 including those parts of a building more than 18m above
 20 the ground. In the latter circumstances, the cladding
 21 system and the substrate to which the insulation is
 22 applied must also meet the requirement for limited
 23 combustibility. Where the substrate is a metal-framed
 24 wall system rather than masonry or concrete,
 25 a non-combustible lining board must be specified to the

26

1 external face of the metal frame wall (eg. calcium
 2 silicate board or similar performing)."
 3 Do you see that there?
 4 A. Yes.
 5 Q. Now, again, that whole paragraph is plainly wrong and
 6 utterly misleading, isn't it?
 7 A. But, again, it's saying it can be considered a material
 8 of limited combustibility. It's not saying it is
 9 a material of limited combustibility; it says it can be
 10 considered via the regulation.
 11 Q. But anybody reading this certificate would be led to
 12 believe that it was a material of limited
 13 combustibility, looking at those words, wouldn't they?
 14 The word "considered", given "limited combustibility"
 15 has a very special meaning in Approved Document B,
 16 doesn't change that, does it?
 17 A. But it's not saying it is a material of limited
 18 combustibility. It's difficult, that. We were looking
 19 at the regulations. They were full of ambiguity around
 20 this kind of thing. But, yeah, I agree what you're
 21 saying, it doesn't look right when we look back at it
 22 now.
 23 Q. It doesn't say here, does it, that only one 8414 test
 24 has been carried out? It doesn't say the system that
 25 that was carried out on in 2005. It doesn't have any

27

1 restriction or qualification or caveat, does it?
 2 A. Is there not an addendum to this document where it lists
 3 that information?
 4 Q. I don't believe there is.
 5 A. Okay.
 6 Q. I mean, someone will correct me if I'm wrong.
 7 Do you agree, looking at the wording, where it says,
 8 three lines down:
 9 "In the latter circumstances, the cladding system
 10 and the substrate to which the insulation is applied
 11 must also meet the requirement for limited
 12 combustibility."
 13 Doesn't that wording reinforce the message of this
 14 paragraph, which is saying that this is a material of
 15 limited combustibility?
 16 A. Hold on.
 17 (Pause)
 18 Sorry, and the question again?
 19 Q. Yes. To put it more simply, isn't it clearly saying
 20 that the insulation meets the requirements for limited
 21 combustibility, and that the other components of the
 22 system must meet them as well? Isn't that what --
 23 A. It's definitely saying that the other components
 24 surrounding the insulation must meet the requirements of
 25 limited combustibility, yes.

28

1 Q. Yes, and it's the use of the word "also". Doesn't that
2 reinforce the point that a reader of this would be led
3 to believe that it was a material of limited
4 combustibility?
5 A. It's saying the requirement for limited combustibility,
6 not ... but, yeah, I agree what you're saying, it's
7 definitely ambiguous.
8 Q. And the reference here to diagram 40 is incoherent,
9 isn't it, because K15 was never going to be used as the
10 outermost external layer of a cladding system, was it?
11 (Pause)
12 A. No, it wasn't.
13 Q. So diagram 40 didn't apply, did it? It had no relevance
14 to this.
15 A. It's solely for external surfaces, isn't it, diagram 40?
16 Q. Yes.
17 A. Okay.
18 Q. If we look at what you say in your witness statement
19 about this, if we go to paragraph 92(d) on page 42 of
20 your witness statement {KIN00022312/42}, you're being
21 asked about this certificate and why Kingspan didn't
22 take any action about the wording in it, and you say
23 this:
24 "We were paying experts to make opinions based on
25 our product properties and their applicability in

29

1 accordance with Building Regulations. We supplied the
2 product data they would write the guidance. These
3 bodies usually kept themselves in check and we were
4 clutching at anything that would support the use of our
5 products and very busy trying to balance all the needs
6 of the companies(sic) business development therefore
7 I believe it went unchecked properly by us. That being
8 said the documents were very cheap compared to normal
9 agreement certificates that could cost £20,000 per year
10 compared to an initial £2,000 to produce the whole
11 document."
12 Do you see that there?
13 A. Yes.
14 Q. Now, far from this certificate having gone "unchecked
15 properly by us" -- that's what you say there, three
16 lines up from the bottom of that paragraph -- far from
17 that being the case, in fact Kingspan were very pleased
18 with this wording, weren't they? They knew exactly what
19 it said and they were very happy with it.
20 A. It -- yeah, of course, it had its benefits.
21 Q. And they knew that the wording was misleading. You and
22 your superiors knew that, didn't you?
23 A. Yes.
24 Q. The language you use there suggests -- is this right? --
25 that you were just desperate for any support that could

30

1 be given for the K15 product; is that fair?
2 A. It was business critical, because it was an important
3 product.
4 Q. Yes. Putting it simply, a certificate from the LABC
5 saying that K15 was of limited combustibility and
6 suitable for use in all situations was of enormous
7 benefit to Kingspan commercially, wasn't it?
8 A. Yes.
9 Q. Can we look, then, at an email from Philip Heath about
10 this certificate. If we can go to {KIN00005383}. Here
11 we can see it's an email from Philip Heath on Thursday,
12 7 May 2009, and it's sent to a lot of the generic
13 Kingspan email addresses, and then a number of
14 individuals are copied in, including Malcolm Rochefort.
15 Do you see that there?
16 A. Yes.
17 Q. Would you have received this email as one of the
18 technical services people on those email strings?
19 A. I'm not 100% sure if I was -- I should have been.
20 I should have got a copy of this.
21 Q. Do you remember getting a copy? If we scan down it, it
22 begins:
23 "GREAT NEWS!"
24 Let's read some of it together. He says:
25 "Please find attached Local Authority Building

31

1 Control Approval for K15 Rainscreen Board."
2 Then he explains in the next section, "What is LABC
3 approval?", and he says, under "Benefits":
4 "Having a building type (housing, commercial, or
5 industrial) or a complete building element -
6 a 'system' - approved by LABC means that it can be used
7 without the full plans approval process happening
8 repetitively around the country at each site. This
9 saves time and money for developers, designers,
10 engineers, contractors and builders."
11 Then he says this:
12 "The highlight of this Certificate and supporting
13 documentation is the Requirement under B4 of AD B -
14 External Fire Spread. 'Since K15 can be considered
15 a material of limited combustibility, it is suitable in
16 all situations shown on Diagram 40 ...'"
17 So he sets out the paragraph there verbatim that
18 we've just been discussing.
19 At the end of that paragraph, he says:
20 "N.B. This statement does not differ from anything
21 [Kingspan] states."
22 Then he says:
23 "K15 remains the only insulation board that has
24 successfully met the requirements of the BBA and LABC
25 System Approval.

32

1 "All the relevant documents surrounding the LABC
2 System Approval Certificate are attached."
3 It's right, isn't it, that far from being unchecked
4 by Kingspan, this very wording about limited
5 combustibility was being celebrated within the company,
6 wasn't it?
7 A. We wouldn't have -- I don't believe -- I'm not
8 completely au fait with the process, but I don't believe
9 it went through the same sort of back and forth checking
10 that, like, a BBA certificate would, but certainly you
11 can see there that we -- there were -- Kingspan were
12 pleased with the benefits of the certificate.
13 Q. Yes, Philip Heath was thrilled, wasn't he? Do you
14 remember that?
15 A. It can be seen here, yes.
16 Q. Yes. And he's highlighted in bold "material of limited
17 combustibility", and he's called it the highlight of the
18 certificate. That was indeed the highlight of the
19 certificate, wasn't it?
20 A. That's the main clause, because they're comparing the
21 product as like a material of limited combustibility,
22 definitely.
23 Q. Do you agree that the LABC certificate should have
24 either been immediately corrected or withdrawn by
25 Kingspan?

33

1 A. If the K15 BS 8414 test had been more ... I believe if
2 that statement had referenced the BS 8414 test that we
3 did in the defined construction, that would have made
4 that more acceptable.
5 Q. I see. So is this back to your point that you thought
6 at the time --
7 A. They're comparing it to -- they're saying it can be
8 considered like a material of limited combustibility.
9 They're not saying it is a material of limited
10 combustibility; they're saying it's following the
11 limited combustibility route. Because it meets that --
12 because it's BS 8414-1, then it puts it in the same box
13 as limited combustibility.
14 Q. Okay. But even if you did think that that was
15 an appropriate route, by this time, you had changed the
16 product that was being sold and it performed worse in
17 fire, so isn't that a fundamental problem here?
18 A. It is a fundamental problem, yes.
19 Q. Can we go to another email now, {KIN00005385}. This is
20 an email sent on 5 June by you to Mark Swift, and
21 Gareth Mills and Andrew Pack are copied in. Friday,
22 5 June 2009. You are talking about Approved Document B
23 in the subject, and you say this:
24 "ADB (B4 diagram 40).
25 "Personally I would just say that we now have the

34

1 LABC document and as long as the guidance within it is
2 followed [there] are no limitations of use for K15 in
3 high rise external ventilated facades.
4 "This document will be available to all LABC
5 therefore we will not get any problems in the future
6 when seeking approval for use from Local Authority
7 Building Control Officers.
8 "From now on when challenged I'm simply going to
9 send the LABC document and let that do the talking.
10 "I have copied AP and GM to allow them to comment."
11 So that's Andrew Pack and Gareth Mills.
12 So that was your strategy after that point, wasn't
13 it, to let that certificate, misleading as it was, do
14 the talking and get K15 onto high-rise buildings, and it
15 took the pressure off for a while, didn't it?
16 A. Yeah, I was drowning in enquiries about K15, so I was
17 just following suit from my line manager that this was
18 the solution.
19 Q. Yes. It gave you a much needed reprieve, didn't it, in
20 terms of something to point to on projects to say you
21 can use K15 over 18 metres, because there was no test
22 evidence, was there, that supported that?
23 A. There was test evidence, but it was not directly
24 relevant, like we discussed yesterday.
25 Q. Yes, thank you.

35

1 Who would have been responsible in May 2012 for
2 dealing with LABC certification for K15, can you help us
3 on that? Who would that have been?
4 A. I'm not 100% sure. It could have been Gareth or Andy or
5 maybe Matthew Evans.
6 Q. Can we go forward now with the story, {KIN00005552}.
7 I want to look at an email on page 1 that you wrote to
8 Gareth Mills, in the middle of that page. So this is
9 now September 2012, and it's headed "LABC Registered
10 Systems", and you say to Gareth:
11 "Hi Mate,
12 "What's the status of this project was it done?"
13 Do you see that there?
14 A. Yes.
15 Q. Now, by then the system approval had lapsed, is that
16 right, the LABC system approval?
17 Actually, if I show you another email. Look at the
18 top of this chain now to your email to Tony Millichap on
19 Monday, 15 October there. You say this:
20 "Hi Tony.
21 "You may or may not be aware that our LABC approval
22 for K15 has lapsed ... without this we have lots of tall
23 building issues which are causing a major headache and
24 potentially a lot of lost work. Whose responsibility was
25 the K15 LABC approval as GM ..."

36

1 Is that Gareth Mills?
 2 A. Yes.
 3 Q. "... refuses to answer my emails on the subject and
 4 AP ..."
 5 Is that Andrew Pack?
 6 A. Yes.
 7 Q. "... says that although he new it had lapsed he was
 8 going to wait to see if they contacted him as he kicked
 9 it off.
 10 "I need to also put pressure back on production to
 11 come up with a testable K15 as to get a new LABC type
 12 approval we will probably need new data (since we let it
 13 lapse).
 14 "Your thoughts on this issue would be appreciated."
 15 Do you see that there?
 16 A. Yes.
 17 Q. So we can see you're obviously concerned that the
 18 certificate 's lapsed and you've got lots of tall
 19 buildings and lots of potentially lost work if you can't
 20 justify K15 on tall buildings, that's right, isn't it?
 21 A. Yes, that's the case.
 22 Q. You say in the third paragraph down that you have got to
 23 "put pressure back on production to come up with
 24 a testable K15". You see you use the word "testable"?
 25 A. Yes.

37

1 Q. Now, that comment confirms that the current K15 was not
 2 testable, doesn't it, if production need to come up with
 3 one?
 4 A. I believe, without cross-referencing the technical
 5 meeting notes, I believe they were still trialling
 6 different variants and coming up with modifying the
 7 ovens and that sort of thing, so yeah.
 8 Q. Yes.
 9 A. I was pushing production to sort that issue out,
 10 basically.
 11 Q. Yes. And it must follow from what you have said here,
 12 doesn't it, that at this point, October 2012, you didn't
 13 think you had a version of K15 which could pass certain
 14 fire tests as part of a system tested to BS 8414?
 15 A. Yeah, I was always concerned about the products, so ...
 16 Q. And no tests had been done to BS 8414 since June 2008;
 17 that's right, isn't it?
 18 A. We'd been doing small scale tests, bench scale tests,
 19 we'd been oxygen index testing, there was lots of work
 20 going on behind the scenes to come up with an improved
 21 material.
 22 Q. Yes, but wasn't the real reason that there had been no
 23 testing that actually you had the LABC certificate and
 24 you had favourable BBA certificates for some of that
 25 time, and they took the heat off?

38

1 A. Yeah, I think we were told to pull the plug on expensive
 2 testing.
 3 Q. Yes. We're going to come to that in a moment, actually,
 4 I think we get that more directly.
 5 You write again on this issue, four days later, on
 6 19 October. If we look at that, it's at {KIN00005554},
 7 and I want to go to the first email in the chain at the
 8 bottom of page 2 {KIN00005554/2}. And this is you to
 9 Gareth Mills, Joel Clarke, Andrew Pack, and the subject
 10 is "LABC for K15", and you say in the first paragraph:
 11 "With regards to trying to get something out of the
 12 LABC to replace our old (out of date?) LABC K15 type
 13 Approval can I ask who is planning to take this on?"
 14 Then you say this:
 15 "As Wintech are now aware our LABC document is not
 16 valid anymore we are coming up against all sorts of
 17 issues which will inevitably mean we are going to
 18 loose(sic) a lot of work."
 19 Do you see that there?
 20 A. Yes.
 21 Q. Can you help us, you talk about Wintech there, who were
 22 Wintech?
 23 A. Wintech are ... I think they're -- they're sort of
 24 certification engineers for the glazing industry.
 25 Q. Yes?

39

1 A. They are consultants, fire engineers, I believe.
 2 Q. Tell us, what problems were Wintech causing at that
 3 time?
 4 A. I think they were refusing to accept Kingspan's
 5 information.
 6 Q. Yes. They were raising real questions about the use of
 7 K15 on buildings over 18 metres, weren't they?
 8 A. Yes, that's correct.
 9 Q. We will come to some examples of that later.
 10 Going on, you say in the third paragraph:
 11 "There are several very big projects that I believe
 12 are going to come unstuck because we no longer have this
 13 information therefore it's important we understand how
 14 much and how long it will take to get a replacement. I
 15 appreciate we may need some further test work and the
 16 replacement may not be as useful as the previous version
 17 however can we ask the question as to how much and what
 18 we need to supply? If we have not already."
 19 Do you see that there?
 20 A. Yes.
 21 Q. It's very clear what you mean by coming unstuck is that
 22 that certificate had been of fundamental importance to
 23 winning high-rise projects, and without it Kingspan was
 24 in much more difficulty?
 25 A. Yes, that's the case.

40

1 Q. Were you aware at the time what effect that LABC
 2 certificate had had on sales of K15 into the high-rise
 3 market? Were you ever given any indication of that?
 4 A. I didn't really follow the sales side of the business,
 5 I just validated my work from speaking to the business
 6 development side, you know, they would push me for work
 7 in specific areas, so that's what I concentrated on.
 8 I knew it was a successful product.
 9 Q. Yes. So you knew it had been very important in terms of
 10 sales in the high-rise market, that LABC certificate?
 11 A. Yes, that's correct.
 12 Q. If we look at the fourth paragraph, you say there:
 13 "As the technical note and the literature reference
 14 the LABC Approval we need to make a decision as to
 15 whether we should still send out this document or not.
 16 Have we had anything official to advise that it's no
 17 longer relevant?"
 18 So is it right that one of the options you're
 19 canvassing here is whether it might be possible still to
 20 send out that LABC certificate, even though it had
 21 lapsed? That's right, isn't it?
 22 A. I'm just asking the question here, aren't I?
 23 Q. Yes.
 24 Now, I just want to, moving forward, ask you about
 25 the registered details certificate which was issued for

41

1 K15 on 20 August 2014. If we go to that, it's at
 2 {NHB00000798}. This is an LABC registered details
 3 certificate. Do you see that there?
 4 A. Yes.
 5 Q. Then on validity at the bottom left-hand corner of this
 6 page, it says:
 7 "This certificate was first issued on 28th August
 8 2013 and is valid until 30th November 2014 Issue Dated
 9 20th August 2014."
 10 Do you see that there?
 11 A. Yes.
 12 Q. So slightly oddly it appears to be, we think,
 13 an extension of the previous certificate from
 14 28 August 2013, but it's only valid until 30 November,
 15 even though it's been issued on 20 August 2014. Does
 16 that sound right, from those dates?
 17 A. That's the way it looks there, yes.
 18 Q. Yes. If we go to page 3 {NHB00000798/3} in the middle
 19 of the page under the heading "AD B Fire Safety", do you
 20 see there it says this:
 21 "Fire safety.
 22 "From the results, it can be considered as
 23 a material of limited combustibility and meets the
 24 criteria for Class 0 ... Since K15 can be considered a
 25 material of limited combustibility, it is suitable for

42

1 use in all situations shown on Diagram 40 ..."
 2 Now, that's an exact repeat of the wording
 3 I previously took you to in the May 2009 LABC approval
 4 summary. Do you see that?
 5 A. Yes.
 6 Q. Again, that is inaccurate and misleading, isn't it?
 7 A. (Pause). Yes. The same answer as before, really, with
 8 regards to my -- this thing about "considered
 9 a material", not actually a material. I can see where
 10 they were coming from with this. But, yeah, it is
 11 misleading.
 12 Q. And can you help as to how that could have happened
 13 again in this certificate?
 14 A. I was not involved directly in the production of these
 15 certificates, so I think that -- were they only issued
 16 for a year or something like that? So ...
 17 Q. Right. Who was involved in the issuing of these
 18 certificates and approving the wording?
 19 A. I think it might have been Gareth Mills or Andrew Pack.
 20 Q. Okay, yes.
 21 A. I mean, I had -- these emails were sent to me and copied
 22 to me, asking questions, but like I say, it wasn't my
 23 main focus at the time.
 24 Q. Okay.
 25 Can we now go to {NHB00000810}, which is a chain of

43

1 correspondence between a building control body in
 2 Manchester called Assent and the NHBC from
 3 November 2014. I don't believe you're copied in on
 4 these emails, or received them, but I want to show you
 5 them nevertheless.
 6 If we go first to the bottom of page 5
 7 {NHB00000810/5} and over into page 6 {NHB00000810/6}, we
 8 can see at the bottom of page 5 there's an internal
 9 email from John Miles of Assent Building Control in
 10 Manchester, on 12 November 2014, at 15.58 and he is
 11 asking others about the use of K15 on buildings over 18
 12 metres. So the subject is "Kingspan K15 insulation
 13 above 18m", and he says:
 14 "Afternoon all,
 15 "I have the query below and wondered what the view
 16 is on buildings over 18m. Would anyone have any
 17 hesitation in accepting this?"
 18 Then he carries on and he's given some details below
 19 that.
 20 Now, there is a response to him at the top of page 5
 21 on the same day, 12 November, at 16.17. At the top of
 22 page 5. Yes, and there it's someone called Jane Keeley,
 23 where she says this:
 24 "Hi John,
 25 "As I understand it Kingspan have a test certificate

44

1 where it is not combustible when used in conjunction
2 with a non-vented rainscreen cladding. The certificate
3 does not cover the situation where it is used with a
4 vented rainscreen cladding and I have heard that it
5 burns quite readily when it is used in a vented
6 situation. I believe the LABC certificate has been
7 withdrawn now.

8 "I have just received details with Kingspan at a
9 height of over 18 and I have asked for a test
10 certificate specifically for use with a vented
11 rainscreen situation."

12 Do you see that there?

13 A. Yes.

14 Q. Going up the chain --

15 SIR MARTIN MOORE-BICK: Do we know who Jane Keeley is?

16 MS GRANGE: I think she may be within Assent. Yes, she is
17 another individual within the Assent Building Control
18 body.

19 SIR MARTIN MOORE-BICK: Right, thank you.

20 MS GRANGE: Sorry, I should have said that.

21 If we go up the chain on page 4 {NHB00000810/4}, we
22 can see that at 12.08 on 13 November, Jane Keeley
23 forwards the chain of correspondence to John Lewis at
24 the NHBC. Do you see that there, on 13 November?

25 A. Yes.

45

1 Q. She says:

2 "Not had chance to read this yet but is this the one
3 they have withdrawn/are withdrawing?"

4 Then if we scroll up to the top of page 1
5 {NHB00000810/1}, John Lewis' email is quite long, this
6 is John Lewis of the NHBC, and we're going to talk quite
7 a bit in the rest of today about the NHBC, but it starts
8 with this. He says, back to Jane Keeley:

9 "It's all garbage. Hereford LABC didn't know what
10 they were talking about. We had a telephone call with
11 LABC Warranty Technical Manager (can't recall his name)
12 at which he stated that they were withdrawing their
13 approval straightaway- that was on 27th October. So
14 I would check it's still valid, if I was you."

15 Do you see that there? Then he sets out various
16 parts of ADB.

17 Now, were you at any time made aware that the LABC
18 had been contacted by the NHBC in this way about the
19 content of this particular certificate?

20 A. I don't believe so, but I did -- I think I might have
21 met John Lewis and I might have had -- we might have had
22 this conversation, or I might have something around this
23 area. So ...

24 Q. Yes. So if we go to page 2 {NHB00000810/2} of
25 John Lewis' long email, we've got a photograph there,

46

1 and what he does in the next section is he explains the
2 difference between tests to BS 8414-1 and part 2, and
3 then at the very bottom of that page, in the very bottom
4 paragraph beginning "Kingspan" he says this:

5 "Kingspan have since done at least two tests (I
6 suspect they've done more but have kept the results
7 close to their chests because they performed so badly!)
8 using a steel frame and ventilated rainscreen and there
9 is an issue with ongoing burning. Once the fire source
10 is extinguished, the insulation continues to burn up the
11 cavity and, in one case, continued over the cavity
12 barrier and to the top of the test rig. So, it's not
13 clear why the LABC detail states that it's a MOLC [so
14 material of limited combustibility] when it clearly
15 isn't."

16 Do you see that there?

17 A. Yes.

18 Q. Then on the next page, top of page 3 {NHB00000810/3},
19 after he's done the screenshot of the LABC certificate
20 that we were just looking at, he writes immediately
21 under that:

22 "(The bit about using a non-combustible lining board
23 instead of a masonry backing on a steel framed wall has
24 since proved not to be correct. These words were
25 Kingspan's -- they assumed that it would perform the

47

1 same but, when they did the tests, it was found that it
2 performed far worse)."

3 Do you see that there?

4 A. Yes.

5 Q. Now, that's correct, isn't it? The advice to use
6 a non-combustible backing board on steel framed
7 structures came from Kingspan originally, didn't it?

8 A. Yes, that's correct.

9 Q. And that was to try and mask the fact that no successful
10 test to BS 8414-2 on a steel framed structure had been
11 carried out on any system incorporating K15?

12 A. That was done to extend the part 1 test to cover the
13 part 2, yes.

14 Q. Yes, but without there actually being a part 2 test?

15 A. Without there being a part 2 successful test at the
16 time, yes.

17 Q. Yes.

18 Then in the next paragraph down, still on page 3, he
19 says this:

20 "It's all an accident waiting to happen and we're
21 meeting with all the PIR manufacturers to try and get
22 something sorted. But, in the meantime, they continue
23 to state that it's fine and most BCBs [building control
24 bodies] accept that at face value without sifting
25 through the details. However, DCLG are now on the case,

48

1 hence why we need to sort something out soon."
 2 Do you see that there?
 3 A. Yes.
 4 Q. So this is November 2014. Were you at this stage
 5 alerted to the fact that DCLG, the Department for
 6 Communities and Local Government, were on the case?
 7 A. I don't recollect them being on the case, so to speak,
 8 no.
 9 Q. Did you -- sorry?
 10 A. I know that we were bombarded by queries of this nature
 11 around this time.
 12 Q. Did you yourself ever have any contact with the DCLG
 13 about this and the use of K15 over 18 metres?
 14 A. I think we -- I think I might have had a conversation
 15 with Anthony Burd.
 16 Q. Yes. Can you remember what was said?
 17 A. But that would have been a while back. Really around,
 18 I think it was -- maybe it was around the time that
 19 8414-1 and 2 was being included within ADB.
 20 Q. So much earlier?
 21 A. Yeah.
 22 Q. Okay. So you don't recall having a conversation in or
 23 around 2014 or thereafter with the DCLG or anybody
 24 there?
 25 A. I can't recollect that now.

49

1 Q. Or any of your bosses, do you recall them ever meeting
 2 with anyone at the DCLG?
 3 A. We were, we were talking to insurers or other industry
 4 bodies, but not the DCLG, I don't think. We considered
 5 the BRE to be the people that provided the DCLG the
 6 guidance.
 7 Q. But you were aware, weren't you, by late 2013, that the
 8 NHBC was on the case, wasn't it, and starting to ask
 9 difficult questions about K15?
 10 A. Certainly, yes.
 11 Q. On the LABC certificate, were you aware at any stage
 12 that this LABC certificate of 20 August 2014 had been
 13 withdrawn and amended? Were you ever made aware of
 14 that?
 15 A. (Pause). What, this particular version?
 16 Q. Yes.
 17 A. Yeah. I can't recollect, unfortunately.
 18 Q. Okay. We understand that that revised certificate, we
 19 can see an email on 18 December 2014 where it was sent,
 20 that's {LABC0000997} is the certificate that was sent.
 21 Now, this one also appears to be dated 20 August 2014,
 22 if you look in the bottom left-hand side, but it carried
 23 an expiry date, it says it's valid until
 24 30 November 2015. Do you see that?
 25 A. Yes.

50

1 Q. In this certificate, this revised one, the claim that
 2 K15 can be considered a material of limited
 3 combustibility had been removed. So if we go to the
 4 middle of page 3 {LABC0000997/3}, we can see that the
 5 form of words under "ADB fire safety" has changed to say
 6 this:
 7 "Thermosetting insulants ... do not meet the limited
 8 combustibility requirements of AD 82 Table A7 and so
 9 should not be accepted as meeting ... paragraph 12.7.
 10 However, if they are included as part of a cladding
 11 system tested to BR 135 and BS 8414 for use above 18m,
 12 the complete assembly may ultimately prove to be
 13 acceptable. Where the substrate is a metal-framed wall
 14 system rather than masonry or concrete,
 15 a non-combustible lining board must be specified to the
 16 external face of the metal frame wall ..."
 17 Do you see that there?
 18 A. Yes.
 19 Q. So the limited combustibility part has been amended but
 20 it still makes reference to 8414 although it doesn't say
 21 whether it's part 1 or part 2, and it still says
 22 misleadingly, doesn't it, at the end, that where the
 23 substrate is a metal framed wall system
 24 a non-combustible lining board can be specified; do you
 25 see that?

51

1 A. Yes, that's correct.
 2 Q. Can you help us, and you may not be able to, but we
 3 can't work it out at the moment, as to what version of
 4 the LABC certificate was being circulated by Kingspan
 5 between August 2014 and March 2015? Is that something
 6 you would have been involved with?
 7 A. It should have been the most current version of the
 8 document. I think, I remember we had to set up an area
 9 on the intranet or the company website where we had the
 10 relevant versions of documents, because it was possible
 11 that sales managers would have the wrong version on
 12 their laptops and be sending that out, so I tried to
 13 push for a central location to prevent errors like that
 14 happening.
 15 Q. Yes.
 16 Now, just going to a related topic, which is the
 17 decision to stop testing that we've already discussed,
 18 I just want to take you to some emails on this now.
 19 So do you recall that after the BBA certificate was
 20 issued, the first one in October 2008 and the LABC
 21 certificate was first awarded in May 2009, a decision
 22 was made by Philip Heath to stop fire testing or
 23 certainly large scale fire testing of K15; that's right,
 24 isn't it?
 25 A. That's correct, yes.

52

1 Q. If we go to an email he wrote to you and others, if we
 2 can look at {KIN00005382}, this is an email of
 3 11 May 2009, so if we can blow up the top of the page,
 4 so he says to you, Justin Davies, Vincent Coppock,
 5 copying in Malcolm Rochefort and the subject is
 6 "Phenolic Fire Focus Group" and then he attaches the
 7 LABC system approval certificate, he says this:
 8 "Following the success of receiving the attached
 9 LABC accreditation that now satisfies the requirements
 10 for K15 being installed above 18 metres, we should cease
 11 any further fire tests for Ventilated Rainscreens. At
 12 in excess of £15k/test both the sales and business
 13 development teams should be adept enough to use their
 14 tool kit to the full. The pressure is on other
 15 component suppliers of this method of construction to
 16 obtain similar statements or prove their non-combustible
 17 statements.
 18 "This saving will allow other applications and the
 19 Kooltherm brand to achieve a similar focus to that given
 20 to K15 over recent years and look at how the sales in
 21 this have grown. Therefore, the focus on this group
 22 should be other Kooltherm applications where we do not
 23 have the complete sales tool kit. We should also be
 24 considering fire tests, smoke tests etc; that may not be
 25 relevant for either construction or the end use

53

1 application, provided it has a good marketing story,
 2 these should be tabled."
 3 Do you see that there?
 4 A. Yes.
 5 Q. Now, given that this was your area of responsibility,
 6 how did you view this decision to stop testing once you
 7 had the LABC certificate?
 8 A. This is a response, Phil's email is a response to my
 9 phenolic fire focus group meeting request. I set up
 10 a monthly meeting with some of the key chemists just to
 11 try and forward the technology and make sure that they
 12 were focusing on the need for an improved product.
 13 Obviously Phil's kind of hijacked my meeting request
 14 email and he is saying that this is the case.
 15 I remember at the time that I wasn't over the moon about
 16 this, because as far as I saw we still needed more
 17 testing. We were basing our story on some very flimsy
 18 LBA certificates, because as we say they're not very
 19 well written.
 20 What is important here is Phil's comment that he
 21 says -- I mean, it's not brilliantly written -- it's up
 22 to other component suppliers to obtain similar
 23 statements. Like I illustrated yesterday, Kingspan had
 24 demonstrated that K15 or a version of -- an earlier
 25 version of K15 could perform in the BS 8414 test.

54

1 What we wanted was the other suppliers in industry
 2 to come together and we tried to do this with
 3 Rainscreen Works, was to also test with us and to
 4 demonstrate that their systems could be used as well.
 5 But like I say, we had a reluctance from a lot of
 6 the cladding manufacturers, they were sort of happy that
 7 the questions weren't being asked of them at this point
 8 in time.
 9 So what Phil says there, "to prove their
 10 non-combustibility statements", he means to prove that
 11 they can perform in a similar manner to limited
 12 combustibility. That's what he's trying to say there.
 13 Q. I see. So he's not saying there the pressure's now on
 14 component suppliers who are competitors to prove their
 15 non-combustible statements?
 16 A. No, he's talking about other elements of the cladding
 17 system. So, you know, the rainscreen panels,
 18 specifically those compressed kind of fibre types like
 19 Trespa Eternit, that sort of thing, and obviously ACM,
 20 which we knew wasn't great in performing in this test,
 21 so ... yeah, he's just trying to say that "We've got
 22 what we need for the moment, we haven't ticked all the
 23 boxes, but we've got evidence" and that was always the
 24 strategy, really. We knew by this point we could never
 25 provide a catch-all, we've done everything to meet the

55

1 market needs.
 2 When the LABC came in and wrote things like that on
 3 top that kind of clouded our original story and we
 4 obviously hid behind that.
 5 Q. You said you weren't over the moon about this. Do you
 6 ever recall going and speaking to Mr Heath and saying,
 7 "Listen, we can't stop testing, we don't have any
 8 substantiation for K15 over 18 metres", certainly not
 9 the one that you're selling by that point; did you ever
 10 have that discussion with him?
 11 A. I don't know if Phil was my line manager at this time.
 12 Q. So who would have been your line manager?
 13 A. I think it might have been Tony.
 14 Q. Tony who?
 15 A. Tony Millichap.
 16 Q. Oh, I see, yes.
 17 A. Okay, so, you know, we had --
 18 Q. I think, didn't Philip Heath stay until --
 19 A. We had separate budgets. Phil went off to Australia for
 20 a couple of years, then he came back and took on
 21 a different role.
 22 Q. Yes, that's in 2010.
 23 A. Yeah.
 24 Q. But at this point, 2009, I don't believe
 25 Tony Millichap's taken over yet.

56

1 A. Oh, right, okay.
 2 Q. So just to ask my question again, do you ever recall
 3 going to Mr Heath or indeed Mr Millichap and saying "We
 4 can't not test because we haven't got anything to
 5 support K15 being used above 18 metres"?
 6 A. I think because of the weight on my shoulders that I put
 7 on my own shoulders probably, I took these things as
 8 a bit of a breather sometimes, you know. It was ...
 9 I was overwhelmed with the amount of work I was dealing
 10 with, so, you know, sometimes I didn't deal with things
 11 correctly.
 12 MS GRANGE: Okay. Thank you.
 13 Mr Chairman, I think that's a good moment for the
 14 morning break.
 15 SIR MARTIN MOORE-BICK: Is it? Good.
 16 We will have a break now, Mr Meredith, we will come
 17 back at 11.35, please, and again please don't talk to
 18 anyone about your evidence while you're out of the room.
 19 Thank you.
 20 (Pause)
 21 Right, 11.35, please.
 22 MS GRANGE: Thank you.
 23 (11.20 am)
 24 (A short break)
 25 (11.35 am)

57

1 SIR MARTIN MOORE-BICK: Right, Mr Meredith, all ready to go
 2 on?
 3 THE WITNESS: Yes.
 4 SIR MARTIN MOORE-BICK: Thank you very much.
 5 Yes, Ms Grange.
 6 MS GRANGE: Yes, thank you.
 7 So staying with the topic of the decision to stop
 8 testing, can we look now at {KIN00008845}, which are
 9 some minutes of a fire focus group meeting for phenolic
 10 foam on 18 May 2009. We can see you're present and it
 11 appears that you took the minutes. Do you see that
 12 there, at the top?
 13 A. Yes.
 14 Q. Do you know, was this the first meeting of that group
 15 that took place? It's 18 May 2009.
 16 A. I think looking at the way I've set out the meeting
 17 minutes, it does look like this is something that --
 18 this is a kickoff meeting for that format, yeah.
 19 I would have needed something more official to push
 20 these issues, basically, so that we ran that group, yes.
 21 Q. Yes, and we can see Malcolm Rochefort is there and
 22 apologies are sent by Philip Heath on this occasion.
 23 Then going down, under "Background", it says this:
 24 "The meeting was called to organise, agree and
 25 understand the current fire testing requirements and

58

1 mandatory product development of our New technology
 2 Kooltherm. There are several fire performance
 3 requirements that are crucial for sales of Phenolic
 4 however in some areas on development Phenolic products
 5 we are falling just short of the mark."
 6 Do you see that there?
 7 A. Yes.
 8 Q. Then that paragraph carries on:
 9 "This group was originally pulled together as we
 10 believed we must have the BS 8414-1 and 2 ... fire
 11 propagation test on Kooltherm K15. Following the recent
 12 release of the K15 BBA and the LABC Lantac Approval this
 13 urgent requirement has been relaxed as the documents are
 14 working to cover the regulatory desires for specific
 15 system approval."
 16 A. Yes.
 17 Q. Then you have:
 18 "Other areas of concern relate to the surface spread
 19 fire performance of the product that we are concerned
 20 may have reduced, this can be seen in recent BS 476
 21 Part 7 tests ..."
 22 Then if we go on to item 2 of the meeting minutes
 23 there is a heading "Kooltherm K15 façade test", and it
 24 says there:
 25 "Following discussions it was agreed that we still

59

1 need to look at developing a product that will be able
 2 to pass a BS 8414-2 test as a back up to the LABC
 3 documentation."
 4 Then it goes on:
 5 "Current fire propagation levels with ATH filled and
 6 OP920 development products are not adequate for this
 7 test."
 8 Do you see that there?
 9 A. Yes.
 10 Q. "Thus currently we are not in a situation to test due to
 11 the prolonged levels of after-burn which are
 12 experienced."
 13 So again here is it right that you're confirming
 14 that K15, as you have got it currently at that time,
 15 can't pass a large scale fire test as part of the system
 16 tested to 8414-2?
 17 A. I am confirming that it won't pass some -- I had
 18 confidence that we could pass with less onerous systems,
 19 but with aluminium composite materials and weaker
 20 façades, then, yeah, K15 was going to struggle.
 21 Q. Yes.
 22 Can we now go to {KIN00009135}, which is an email
 23 chain between you and a number of others in August 2009
 24 about a particular project, and I want to look at the
 25 second email in the chain dated 28 August at 10.29 on

60

1 that page there. It's from you to Philip Heath --
 2 sorry, it's not to Philip Heath, it's to Mark Swift,
 3 Richard Bromwich, do you see that there?
 4 A. Yes.
 5 Q. And the technical helpdesk is copied in to that.
 6 A. Yeah.
 7 Q. You say this:
 8 "I have given Steve a courtesy call apparently this
 9 is a very small area behind brass cladding onto concrete
 10 at the very top of the building which is set back from
 11 the main facade with a large terrace therefore very low
 12 risk anyway
 13 "It's Stuart Taylor at Wintech whom is raising
 14 concerns and we know as being pro mineral wool.
 15 "Apparently the lower areas of the job went to
 16 rockwool as Roofdec did not get any assistance from us.
 17 I suspect this is not true and they have their own
 18 agenda here ... does anyone know any different?"
 19 Then you say:
 20 "It may be a nice job to market as its definitely
 21 over 18 metres and its one of the bigger apartment
 22 blocks in the UK."
 23 Then you say:
 24 "Also Beetham Towers in Manchester which is another
 25 high rise job that went to K15 (I think) ... can we do

61

1 some case studies??? I know these enquiries have died
 2 out since we obtained the LABC approval however it would
 3 be good to get as much supporting evidence of successful
 4 jobs in the portfolio while we have the chance."
 5 So you say there in that last paragraph that I just
 6 read that "enquiries have died out since we obtained the
 7 LABC approval", and that was because building control
 8 bodies would have the LABC certificates saying it was
 9 a limited combustibility material, wouldn't it, so you
 10 were getting fewer queries; is that right?
 11 A. Yes, that's correct.
 12 Q. These jobs that you're discussing in this email, did you
 13 think they were all replicating the configuration of the
 14 2005 test? Or were you aware that they were different
 15 systems?
 16 A. I'm definitely aware that they're different systems,
 17 yes.
 18 Q. Yes. Do you ever recall dealing with, or anyone else in
 19 Kingspan dealing with a customer who was proposing to
 20 use the exact build-up that had been tested in May 2005?
 21 A. No, because the exact build-up was only -- it was
 22 a simulation test. We were only looking to simulate the
 23 performance of a non-combustible cladding.
 24 Q. Yes. And you were well aware, weren't you, that
 25 Kingspan should not have been advocating the use of K15

62

1 with a structural steel frame as you did not have any
 2 test evidence to support that, did you?
 3 A. We did not have any test evidence. One of the things
 4 I was looking at here, I was wanting to speak to these
 5 customers, to speak to the fire engineers and to find
 6 out what routes they had gone through to satisfy
 7 compliance. We were looking to build up a bigger
 8 portfolio for K15 and we were looking for fire engineers
 9 who had -- who were comfortable with the performance
 10 based on the information that we were providing to them.
 11 Q. Right.
 12 A. And we were looking to potentially get extended
 13 application rules from someone else apart from the BRE,
 14 because we couldn't get them out of them.
 15 Q. Did you ever find a fire engineer who was prepared to do
 16 that for you?
 17 A. I believe there were, towards the end of my time at
 18 Kingspan we got assessments from several fire engineers
 19 who were expanding the scope of the test evidence based
 20 on the test evidence that we had.
 21 Q. So expanding the scope of the May 2005 test --
 22 A. Yeah.
 23 Q. -- to other systems?
 24 A. Yeah, applying it to other systems.
 25 Q. Even though you knew that wasn't a truly representative

63

1 test and you knew the K15 had been --
 2 A. Yeah, I knew it wasn't a truly representative test but
 3 it was to be taken, looked at, you know, it wasn't
 4 supposed to be a representative test, it was supposed to
 5 be evidence of performance of an insulation behind
 6 a combustible -- a non-combustible layer. So, like
 7 I say, the real criteria of BS 8414 as we understand is
 8 the fire spread up the façade. Once you've got a cement
 9 particle board or something on the outside of the frame,
 10 you're not really going to have to worry about
 11 fire penetrating through the build-up. So it's really
 12 the spread up the façade that's the concern.
 13 Q. But did you ever tell any of those engineers that in
 14 fact the product you tested back in 2005 was no longer
 15 the product you were selling?
 16 A. No, we wouldn't have said that, no.
 17 Q. No.
 18 Can we go to {KIN00003701}, which is an email you
 19 wrote to Philip Heath on 21 May 2008. If you look at
 20 the top, it's about "Cladding queries -- Ice
 21 developments, Woolners Way Stevenage", and you say this
 22 to Philip Heath:
 23 "This was the email I'm worried about ... we simply
 24 do not have the information to support use of K15 above
 25 18 metres with steel frames. I'm worried that the

64

1 product will be removed from site and the ongoing effect
2 of such an action ... I think getting this sorted
3 should take priority over all other projects as its
4 causing us to loose(sic) work."

5 What was Philip Heath's response to your concerns
6 when you raised that with him?

7 A. Was there a response to this email?

8 Q. No, we can't find one. Can you recall his response at
9 any other time, when you raised concerns about not
10 having an 8414 test relating to steel framed systems?

11 A. I think we -- like we've said previously today, Phil
12 felt we'd spent enough money in this direction and it
13 was time to, you know, look after the other products and
14 raise their profiles. So there, you know ...

15 Q. Do you recall anybody recommending to the technical
16 teams in Kingspan that it should stop proposing the use
17 of Kingspan in build-ups with a steel frame system,
18 after you sent this email?

19 A. I think obviously there was Wintech, there were a few
20 other people that raised concerns, but I don't remember
21 anyone internally saying that we should stop selling
22 into that area.

23 Q. And you didn't say that?

24 A. I'd raised my concerns about the absence of information,
25 definitely.

65

1 Q. Okay.

2 I want to move on now to look at the way that
3 Kingspan, the technical team dealt with enquiries from
4 customers, and we will be looking at some projects where
5 Wintech were involved.

6 Can we go now to {KIN0000259}, and these are emails
7 from 2008 on a project called Grosvenor Waterside, and
8 I want to start at the bottom of page 4 {KIN0000259/4},
9 where we can see Simon Hepworth there of Astec Projects
10 to you and Gareth Mills, copying in Philip Heath and
11 Richard Bromwich and others. The subject is "K15
12 combustibility", and he says there:

13 "Gareth I appreciate ['your', I think he means]
14 response, however, as far as I can see the BRE cert'
15 does not cover the testing of K15 and Trespa to BR 135
16 and hence does nothing to back-up your statement that
17 K15 is suitable for use above 18 metres. This is very
18 concerning. Ivor assured me that the test data and BRE
19 cert's were available for the BR 135 test. Can you
20 please clarify?

21 "Regards, Simon."

22 Do you see that there?

23 A. Yes.

24 Q. Now, he's referring to an assurance that you have given
25 him there that the test data and BRE certificates were

66

1 available for the BR 135 test. Had you told him that?
2 Had you assured him that?

3 A. I think I'd assured him that he could -- I worked quite
4 closely with Simon, I think I assured him that he could
5 definitely see the test data. I think Gareth had maybe
6 questioned why he needed it before he sent it out.

7 I think that was what was going on there.

8 Q. Had you assured him that a BR 135 classification report
9 was available for the test that you had done?

10 A. No, I would never have done that, because there wasn't
11 one available.

12 Q. And Kingspan had not at this stage completed any large
13 scale fire testing using Trespa cladding panels, had
14 they?

15 A. No, this was one of the companies that we had tried to
16 involve in Rainscreen Works, who had been reluctant to
17 get involved, and from my understanding they were one of
18 the leaders for high-rise cladding.

19 Q. Yes. So you have got no large scale fire test data
20 using that Trespa cladding panel?

21 A. No.

22 Q. We can see that you then respond to Simon Hepworth with
23 a long email starting about halfway down page 3
24 {KIN0000259/3}, sent on 10 September at 9.26. It's
25 quite a dense email. I'm going to ask you about various

67

1 bits of it as we go. In essence, you're still
2 recommending K15 for the Grosvenor Waterside project.
3 So you say:

4 "Following review of the Trespa FR product and our
5 own enclosed fire test data we believe we have
6 everything required to satisfy Building Control on the
7 above mentioned project. Please refer to text below and
8 attached test report for further confirmation in respect
9 of your questions."

10 So when you say "we believe we have everything
11 required to satisfy Building Control on the above
12 mentioned project", who is the "we" you are referring to
13 there? Is that Kingspan?

14 A. That would be Kingspan, yes.

15 Q. And on what basis did you form the belief that you had
16 everything required to satisfy building control on
17 a project which involved Trespa, and this was a steel
18 structure?

19 A. We had obviously tested with a non-combustible layer in
20 front of our insulant, a 6-mil one, and we'd looked --
21 I think we'd looked at the Trespa FR data, I can't
22 recollect what it is now, but we were being optimistic
23 here that we had the correct information, definitely.

24 Q. When you say optimistic, you didn't have the right
25 information to be able to make that recommendation, did

68

1 you?

2 A. Well, we are ... I don't believe Kingspan ever took

3 complete responsibility for these build-ups, we would

4 always present our information as: "This is what we have

5 and we would recommend that you seek support from the

6 other component suppliers".

7 Q. But we do see again and again and again Kingspan saying

8 that K15 is suitable for projects over 18 metres. That

9 was said, wasn't it?

10 A. Yes.

11 Q. Time and time again, on many buildings?

12 A. Yes. That's -- and that was our -- that was our

13 presented belief, yes.

14 Q. Yes.

15 So you go on, you say, at the end of that first

16 paragraph:

17 "Please refer to text below and attached test report

18 for further confirmation in respect of your questions."

19 In the next paragraph you say:

20 "BR 135 and BS 8414 are alternative methods of

21 compliance [look at ADB 12.5] that have been inserted

22 into the Approved Documents to allow the use of

23 combustible insulations as long as the appropriate fire

24 precautions are provided ie the provision of adequate

25 fire barriers."

69

1 Now, that's not a proper characterisation of the

2 terms of 8414 or BR 135, is it? They don't allow the

3 use of combustible insulation as long as there's

4 appropriate fire precautions provided.

5 A. No, I've written that badly. They're test methods and

6 can be used for the alternative route to compliance,

7 yeah.

8 Q. Yes, but that misrepresents what they're saying. You're

9 saying that they're there to allow the use of

10 combustible insulations as long as appropriate fire

11 precautions are provided, ie fire barriers. That's not

12 the purpose of those tests, is it?

13 A. No, that test, you could actually put a build up

14 together without fire barriers if BS 8414 could

15 demonstrate it.

16 Q. Quite.

17 In the next paragraph down you say:

18 "Kingspan Insulation Limited recommend when using

19 K15 above 18 metres that horizontal fire barriers are

20 adopted at every intermediate floor level. This

21 information has been deduced following the guidance in

22 BR 135 and via testing to BS 8414 (see attached

23 reports). We have attached our BS 8414 test report

24 which most closely represents the system proposed on the

25 above-mentioned project."

70

1 Now, when you're referring there to reports in the

2 plural, and attaching the report which most closely

3 represents, you only had one report at that point,

4 didn't you? It was the 2005 --

5 A. Yeah, and had I not sent the class 0 test reports with

6 this as well?

7 Q. But the class 0 test reports wouldn't be relevant to

8 above 18 metres, would they?

9 A. No, not at all, but they would be part of our standard

10 offering to demonstrate the fire performance of K15.

11 Q. Yes. But you also knew, more fundamentally, by this

12 point that the K15 that's being sold performs even worse

13 in a test situation than the old K15 in that 2005

14 report, didn't you?

15 A. Yes, that was correct.

16 Q. Would you agree that this is actively misleading to the

17 customer who is enquiring about the product?

18 A. Yes, that's the case.

19 Q. And it was deliberate, wasn't it? It wasn't

20 inadvertent, it was deliberately misleading so that

21 Kingspan stayed on that building?

22 A. I mean, this wasn't agreed text, this was ... you know

23 this was ... we were still learning about the test

24 method and Approved Document B at the time, and we were

25 presenting what we considered our best foot forward at

71

1 the time.

2 Q. But you were deliberately misrepresenting the

3 information you had, weren't you?

4 A. But, yeah, we had ... the phenolic material was evolving

5 and it wasn't -- what I'd tested most recently wasn't

6 satisfactory as far as I was concerned.

7 Q. No, yes.

8 Then a little bit further down on that, it's about

9 halfway down through line 10 on that page, there's

10 a paragraph beginning:

11 "Kingspan Insulation Limited tested the

12 Kooltherm K15 onto a non combustible substrate with

13 particle board cladding system."

14 Actually, hang on, I'm just checking. Yes. Yes,

15 can you see that? It starts -- so in the third

16 paragraph it starts four lines down in the third

17 paragraph, towards the right-hand side you can see:

18 "Kingspan Insulation Limited tested the Kooltherm

19 K15 onto a non combustible substrate with particle board

20 cladding system."

21 Do you see that there?

22 A. Yes.

23 Q. It's right, isn't it, that you're using the term

24 non-combustible substrate rather than saying it was

25 masonry because you didn't want to point out the reality

72

1 of the situation that any test data you did have could
 2 only apply to a masonry structure; that's right, isn't
 3 it?
 4 A. We're trying to expand the scope of that test, yes.
 5 Q. Yes, you're not being precise as to what it was tested
 6 on?
 7 A. No.
 8 Q. Then just a little bit further down, same paragraph, on
 9 the right-hand side there's a sentence beginning:
 10 "In accordance with EN 13501 ..."
 11 So that's the European classification system, you
 12 say in accordance with that:
 13 "... a non-combustible substrate can either be
 14 calcium silicate sheathing, masonry or steel. The
 15 tested system was designed so with relatively inert
 16 components so the fire effect of the K15 could be
 17 clearly identified."
 18 Then you say:
 19 "The UAC cladding panels adopted within this test
 20 had the same levels of fire performance as the Trespa FR
 21 panels when tested to BS 476 Part 6 ... And ...
 22 Part 7 ... Also although not directly applicable to the
 23 UK market place (however it is being introduced) the
 24 fire side of the Euroclassifications for the Trespa FR
 25 and the UAC product are very similar as both achieve

73

1 a Euroclass B."
 2 Do you see that there?
 3 A. Yes.
 4 Q. So what you're doing here is, correct me if I'm wrong,
 5 you're desperately clinging to anything you can say
 6 which suggests that the external panel that they're
 7 proposing to use, the Trespa one, is similar to what you
 8 tested on, aren't you?
 9 A. Yeah, we're highlighting similarities as a basis for
 10 their fire engineer for this job to hopefully provide
 11 approval.
 12 Q. But you're bringing in tests, the class 0 test, BS 476-6
 13 and 7, that are of no relevance to this question, are
 14 they?
 15 A. But they're used in the Building Regulations as a way of
 16 identifying materials.
 17 Q. They are.
 18 A. Yeah.
 19 Q. But in terms of whether a material should be put above
 20 18 metres or not --
 21 A. Yes, I understand that.
 22 Q. -- it's not relevant, is it? Were you --
 23 A. It is not directly relevant, but we're trying to build
 24 a picture here.
 25 Q. But were you actually trying to confuse readers in

74

1 a paragraph like that?
 2 A. Not intentionally, no. We were trying to work towards
 3 a goal here.
 4 Q. Then you go on, so at the bottom of that page we can see
 5 a paragraph beginning:
 6 "As the tested system details ..."
 7 You say this:
 8 "As the tested system details the performance of
 9 Kooltherm K15 when used onto a non combustible substrate
 10 with a Class 0 cladding product we believe this is
 11 representational of the construction at i.e. a Class 0
 12 cladding system (Trespa FR) with a high performance
 13 phenolic insulation (K15) fixed onto a non combustible
 14 steel frame sheathing. Based on the enclosed data
 15 Kingspan Insulation Ltd are confident that the product
 16 is suitable for use above 18metres as long as fire
 17 barriers are adopted at the intermediate floor levels.
 18 However as with all alternative methods of compliance
 19 the final approval always needs to come from
 20 Building Control."
 21 Now, the reality is, isn't it, that far from being
 22 confident, you were wholly unsure of how K15 would
 23 behave with a Trespa panel? You couldn't have had any
 24 knowledge of how that was going to play out, could you?
 25 A. (Pause). At this time, we'd had no experience, I don't

75

1 think, of the Trespa panel in an 8414 test, so --
 2 Q. No.
 3 A. You know, we were, like I say, being optimistic with our
 4 suggestions here.
 5 Q. Yes.
 6 A. But at the end of the day, we're saying that, "This is
 7 our point of view, you need to seek advice from
 8 building control or the appropriate approval body".
 9 Q. Yes, but you're confidently saying, as the manufacturer,
 10 that the product is suitable for use above 18 metres in
 11 that specific system.
 12 A. Yeah, I --
 13 Q. You can't get away from that, can you?
 14 A. Yes, I see that.
 15 Q. Any test to support the use of that system would have to
 16 be to BS 8414-2, wouldn't it, because this was a steel
 17 frame structure?
 18 A. (Pause). If you had to do a full large scale test it
 19 would have to be to part 2, yes.
 20 Q. Yes, and we know, don't we, that when Kingspan did test
 21 with a Trespa FR panel in January 2014, the test was
 22 a fail? Isn't that right?
 23 A. Yes, that's correct.
 24 Q. If we look at the second line of the second to last
 25 paragraph there on page 3, do you see, it's the sentence

76

1 beginning:
 2 "As the tested system details the performance of ...
 3 K15 ..."
 4 Then if you go on to the next line it says:
 5 "... when used onto a non-combustible substrate with
 6 a Class 0 cladding product we believe this is
 7 representational of the construction at [and then
 8 something is missing and then it says] ie a Class 0
 9 cladding system ..."
 10 My question for you is: is this a standard pro forma
 11 answer that Kingspan were sending out?
 12 A. No. Not at all.
 13 Q. That's just a typo, is it?
 14 A. Yeah, that's just a typo, I believe. I mean, I might
 15 have had some sort of standard sections of text, but no,
 16 this wasn't a standard letter.
 17 Q. If we go to the last two lines on page 3, right at the
 18 bottom there you say:
 19 "Up until now we have not had any issues with the
 20 use of K15 when used in conjunction with adequately
 21 performing cladding materials thus following supply of
 22 the enclosed test data we expect Building Controls [and
 23 then over the page {KIN00002589/4}] opinion of our
 24 product to be positive."
 25 Now, that's simply not right, is it? You hadn't not

77

1 had any issues with the use of K15. You had encountered
 2 tests in 2007 and 2008 on steel frame structures where
 3 it failed spectacularly, didn't it?
 4 A. I still consider this to be partly the fault of the
 5 cladding system.
 6 Q. Okay. Well, we have been over those documents and we
 7 can see what was written at the time.
 8 A. Yeah.
 9 Q. But it's simply not true, is it, that no questions had
 10 been asked about the use of K15 by this time? Questions
 11 had already started to be raised about compliance for
 12 K15 over 18 metres, hadn't they?
 13 A. Yeah, I believe that's a bad sentence, I think.
 14 Q. Yes. It's wholly inaccurate?
 15 A. Yes.
 16 Q. Now, I just want to break off from this email chain for
 17 just a moment. We're going to come back to it in
 18 a minute and look at another email chain {KIN00005308}
 19 and this is a six-page email chain between you,
 20 Alastair Lambie at Kingspan and Andrew Pack of Kingspan
 21 arising out of a query from a firm of architects about
 22 the use of K15 in a 10 storey project.
 23 If we go to the bottom of page 4 {KIN00005308/4},
 24 the client, who is Beatrice Bryant at Hurd Rolland, says
 25 on 27 July 2007 at 9.09, she says this:

78

1 "Alastair ..."
 2 So this is Alastair Lambie. And then at the top of
 3 page 5 {KIN00005308/5} she says:
 4 "We are considering specifying this for a 10 storey
 5 project (residential) and our fire consultant has asked
 6 me to ask you to send us a copy of the assessment that
 7 was carried out in accordance with BR 135."
 8 Then if we can look at Alastair Lambie, an email he
 9 sends at page 4 {KIN00005308/4} on 8 August 2007, at
 10 8.23 -- Alastair Lambie was in Kingspan, wasn't he?
 11 A. Yes, he was the structural area sales manager.
 12 Q. Yes, and he says this to Andrew Pack on 8 August 2007:
 13 "Andy, the suitability of K15 in a ventilated cavity
 14 over 18 metres is being questioned more and more in
 15 Scotland. Can you forward all the relevant fire
 16 assessments/certificates/documents to the architect
 17 below and to myself -- I can then print them off and
 18 make a 'K15 pack' which can be left when we complete
 19 CPD's or sent to architects/contractors who question its
 20 suitability."
 21 Then if we go up the chain to page 2
 22 {KIN00005308/2}, we see you become involved, and on
 23 14 August 2007 you send a response to Alastair Lambie
 24 and Andrew Pack on this topic, and you say this:
 25 "Alastair, we are a little reluctant to go public

79

1 with the actual test information at the moment as this
 2 is only to BS 8414-1 and I suspect this job would be a
 3 BS 8414-2 project. At the moment I'm doing vast amounts
 4 of work to produce a very robust situation where
 5 Kooltherm K15 can be used on all substrates and with
 6 most generic types of cladding. We appreciate this is a
 7 particular issue in Scotland and over the next 12 months
 8 we will be performing at least 15 large scale tests to
 9 BS 8414 with a total cap ex of well over £200k.
 10 "Until that time we have the BS 8414 flyer, we will
 11 write letters of suitability and for larger projects I
 12 can come and do a specific K15 technical fire
 13 presentation which details our compliance with BR 135.
 14 A common misconception is that the BRE have to write an
 15 assessment to BR 135 when actually all you have to do is
 16 pass the test and therefore you meet the criteria of
 17 BR 135.
 18 "Anyway I was hoping by this time I would have
 19 something better on paper that we could address the
 20 Scottish situation with however this is a little way off
 21 Until then most projects are dealt with on a job for job
 22 basis as although K15 is suitable the surrounding
 23 cladding may mean that you can't use K15 ... that's the
 24 last thing we want to tell our customers so if you can
 25 get the following information I will write a letter

80

1 specifically for this job that hopefully provides enough
2 confidence in our product. Please get off the architect
3 the building height, the storey height, the full
4 construction from inside to out including products,
5 descriptions and brand names. The trouble is K15 meets
6 the criteria of 135 but when you start introducing other
7 factors it gets complicated hence we will not be up for
8 providing all the test evidence in a rainscreen pack."

9 Then you say:

10 "When [you're] next in come and have a chat and I
11 will show you what I can present if the jobs big enuff
12 ... fortunately 9 times out of 10 they accept our word."

13 Do you see that there?

14 A. Yes.

15 Q. It's right, isn't it, that letters of suitability were
16 being written by Kingspan on a project by project basis
17 long before September 2008? Do you accept that?

18 A. Yes.

19 Q. How often were those being written, and who was writing
20 them?

21 A. It was predominantly the senior technical advisers,
22 myself, sometimes Andrew Pack, Gareth Mills,
23 Joel Clarke, maybe Adam Heath.

24 Q. Did anyone check or sign off those letters of
25 suitability?

81

1 A. They would be -- I think we -- we moulded the text
2 eventually to an agreed format.

3 Q. And on the basis of what test data or evidence did you
4 write them? Was it again the only thing you had?

5 A. It was again on what we've discussed.

6 Q. Yes. Was Philip Heath involved in that practice of
7 writing letters of suitability?

8 A. He would have seen or proofed those letters, yes.

9 Q. And what about Malcolm Rochefort?

10 A. I can only assume so, yes.

11 Q. When you say "fortunately nine times out of ten they
12 accept our word", right at the end, is that right that
13 nine times out of ten customers that got in touch with
14 Kingspan about use above 18 metres would accept
15 Kingspan's word?

16 A. I think I was being optimistic there, I was trained to
17 be optimistic.

18 Q. Are you saying that an accurate figure would be less
19 than that?

20 A. Yeah, potentially, I'd say, you know, it was three times
21 out of ten we'd keep a specification. But there was
22 a lot of specifications going about.

23 Q. Was it a commercial strategy, or was it part of the
24 commercial strategy to maximise sales from customers who
25 were not asking technical questions, knowing that that

82

1 would compensate for those that did, because so few
2 raised queries?

3 A. The strategy, the Kingspan strategy would be to go after
4 every job.

5 Q. Right.

6 A. Then often at the time of specification, the cladding
7 isn't fixed. That could change a number of times before
8 the building was built --

9 Q. Yes.

10 A. -- as we know.

11 Q. Now I want to, having looked at that, from earlier,
12 I want to pick up back again in the Grosvenor Waterside
13 chain from September 2008, if we go back to
14 {KIN00002589}, and I want to look on now, I'm looking at
15 your response, at page 4 {KIN00002589/4}. So I think
16 we'd started to look -- yes, we'd been looking at your
17 detailed response. Perhaps we can just remind of you
18 that, back on page 3 {KIN00002589/3}. I had been going
19 through it paragraph by paragraph with you and we'd got
20 to the bottom of the page. Then if we can go over to
21 page 4 {KIN00002589/4}, I want to look at the top of
22 page 4, and right in that top line, in the middle, you
23 begin:

24 "Kingspan Kooltherm K15 rainscreen insulation has
25 been used on many high rise projects and is slowly

83

1 becoming a household name in this marketplace."

2 Do you see that there?

3 A. Yes.

4 Q. Is it right that by September 2008 no other thermoset
5 plastic insulations were being marketed for use over
6 18 metres?

7 A. I don't know if that was the case. I don't know when
8 the Celotex product was introduced.

9 Q. The RS5000 product?

10 A. Or the FR whatever it was, 4000.

11 Q. Well, the RS5000 that was being marketed for use above
12 18 metres was being marketed for use from August 2014.
13 So many years after this.

14 Other than the Celotex product, were you ever aware
15 of any other thermoset plastic insulations that you were
16 competing with in this market?

17 A. I think Xtratherm had a board.

18 Q. Yes. Otherwise, would it be mineral wool products?

19 A. Yeah. Yes.

20 Q. Yes. Were they your main competitor?

21 A. Yes, definitely.

22 Q. Then if we continue, picking it up in the second line at
23 the top of that page, you say:

24 "Where there is a risk of fire or the insulation is
25 semi-exposed Kingspan Insulation Ltd will only allow the

84

1 specification of high performance thermoset phenolic
2 material that will not melt run or drip when exposed to
3 fire. As well as having Class 0 which is a property
4 that few foamed materials can boast of owning the
5 product has very negligible smoke emissions (less than
6 5%) when tested to BS 5111. Both are crucial
7 characteristics that can help maintain life and property
8 in the event of an outbreak."

9 Then you say:

10 "Further to your question in respect of compliance
11 we must highlight again that although we understand the
12 information we are providing has allowed specification
13 and use of our product on other high rise projects the
14 final approval needs to come from Building Control.
15 However we are confident that once the full information
16 has been reviewed continued usage should not be
17 an issue."

18 Do you see that there?

19 A. Yes.

20 Q. Just to be clear, there existed no test data which could
21 support the use of K15 in this build-up, did there?

22 A. This was the Trespa FR construction, wasn't it?

23 Q. Yes, on a steel frame.

24 A. No direct test data, no.

25 Q. Your response is sent on to Wintech for comment, and

85

1 Steve Lee of Wintech responds to Simon Hepworth on
2 1 October, which is, if we go to the second email on
3 page 1 {KIN00002589/1} of this chain, so Steve Lee of
4 Wintech comes back about Grosvenor Waterside, and in the
5 first paragraph he says:

6 "We've had a look at the BRE document, but it is
7 referring to the test that is not recognised as being
8 a cover all, in short what they have tested is not what
9 we've got on the job and BRE will not give approval on a
10 generic detail. As we've spoken about before they will
11 only certify on a job to job basis. While I would not
12 disagree with what Ivor is saying, BRE need to certify
13 the material or the building control officer needs to
14 pass it. I hate to be so negative, but there's a
15 awful(sic) lot riding on this decision and as we've
16 stated we're not Fire engineering specialists."

17 Do you see that there?

18 A. Yes.

19 Q. All of that was correct, wasn't it? Wintech were
20 entirely right to point out that the BRE document
21 couldn't cover all and certainly couldn't cover what
22 they've got on their job?

23 A. Yeah, that document was not a cover-all. Although it
24 was desired to be, it didn't.

25 Q. Yes.

86

1 This email chain is followed by a letter signed by
2 Philip Heath and dated 29 October 2008, if we can go to
3 that, {KIN00002594}, this is a letter from
4 Kingspan Insulation, and it's 29 October 2008, it's for
5 the attention of Mr Simon Hepworth, the senior designer
6 at Astec Projects Limited, and we can see it's about the
7 Grosvenor Waterside residential development off
8 Ebury Bridge Road in London, SW1.

9 Can you remember having any input into the text for
10 this letter?

11 A. I probably might have helped Phil with this, yes.

12 Q. Was that what often happened if these letters of
13 suitability needed drafting, that you and he would work
14 together on a letter?

15 A. I would report to him directly and I would get
16 information, whatever we were using at the time, and we
17 would put it together, yes, definitely.

18 Q. Is this one of the letters of suitability that we've
19 seen you describing to Alastair Lambie? Is that right?

20 A. I mean, these letters of suitability, the intention was
21 that they were bespoke for the specific project.

22 Q. Yes, I understand.

23 A. Although we have catch-all -- we wanted catch-all test
24 data, we knew that we could never say, you know, we
25 could never write a letter that was going to cover every

87

1 scenario.

2 Q. Yes?

3 A. There was different types of cladding which we had
4 different opinions about, and there was different types
5 of fire barriers, et cetera.

6 Q. Yes?

7 A. So, you know, each letter was going to be individually
8 produced, that's why we kind of took this off the
9 frontline technical department, this kind of work,
10 because it was too complex.

11 Q. Yes. Now, the first three paragraphs here, actually the
12 first four -- sorry, the three underneath the first one
13 about -- in response to recent items of correspondence,
14 those three paragraphs below that are setting out some
15 information about the Building Regulations and Approved
16 Document B. We don't need to read those out. He's just
17 pointing out the requirement of limited combustibility,
18 the guidance, then about BR 135 in that third paragraph,
19 and BS 8414 as the alternative route.

20 Then in the final paragraph there, Mr Heath writes:

21 "As you will appreciate, it is not practically or
22 financially feasible for a component manufacturer, such
23 as Kingspan Insulation, to test in accordance with
24 BS8414 with every rainscreen cladding material and
25 component currently available. However, tests

88

1 undertaken by ourselves, with and without a generic
 2 cladding system, showed the requirements of BR135 via
 3 BS8414 test method were achieved. The comparison with
 4 and without a cladding system was important to determine
 5 the influence of a ventilated cavity on the external
 6 face of the Kooltherm, the results confirmed there was
 7 little or no difference."

8 Do you see that there?

9 A. Yes.

10 Q. Again, is it right that the only test he could be
 11 referring to there is the 2005 test?

12 A. And the naked test.

13 Q. And the naked test, yes.

14 If we go over the page to the first paragraph
 15 (page 2 {KIN00002594/2}), it says there at the top:
 16 "Based on above route to compliance, together with
 17 British Board of Agrément approval [that's the original
 18 BBA certificate from 2008] ... Kingspan Insulation
 19 Limited can confirm the product is fit for the intended
 20 purpose and is suitable for your development."

21 Do you see that there?

22 A. Yes.

23 Q. So you're confirming in a formal letter that the K15
 24 product is fit for purpose and suitable for the
 25 development; that's right, isn't it?

89

1 A. That's correct, yes.

2 Q. Yet, as you have accepted, there was no test data that
 3 would support the use of K15 with a Trespa system on
 4 a steel framed --

5 A. There was no direct test data, no.

6 Q. No.

7 It's right, isn't it, that this assurance that
 8 Kingspan confirmed the product is fit for purpose and
 9 suitable for your development was given in many, many
 10 cases by Kingspan, wasn't it?

11 A. It was standard terminology.

12 Q. Yes, and there were hundreds, if not thousands, of
 13 enquiries in which something similar was said; that's
 14 right, isn't it?

15 A. I would say so, yes.

16 Q. And it would lead, that wording would lead many
 17 designers and architects to believe that they had
 18 completed their due diligence in getting written
 19 confirmation from the manufacturer about the suitability
 20 of the product, didn't it?

21 A. The tricky thing is here that the product is only
 22 suitable if all the components around it are suitable.
 23 So ... sorry, could you rephrase the question?

24 Q. Well, yes. I mean, in this letter, for this letter, you
 25 shouldn't have been advising this at all. The furthest

90

1 you could have gone is to say "This was our build-up,
 2 your build-up is different, we don't think you can use
 3 it but it's a matter for you". You could have said
 4 that, couldn't you?

5 A. That would have been a less positive letter, definitely,
 6 yeah.

7 Q. Yes, less positive for Kingspan's commercial sales?

8 A. Yes.

9 Q. And that was the sole consideration at this time, wasn't
 10 it?

11 A. That was the goal of the business.

12 Q. Yes, and not even this time; throughout the period you
 13 worked at Kingspan, that's right, isn't it?

14 A. Yes, certainly.

15 Q. Now, I've taken you to those examples and it's swept up
 16 a number of projects there, but it's one of many others
 17 where similar advice was given. You accept that; yes?

18 A. Yes, definitely.

19 Q. I do not have the time to take you to all of them, but
 20 I've taken you to those.

21 Can we now look at {KIN00009643}. This is an email
 22 chain from November 2013 where questions were being
 23 asked about the use of K15 over 18 metres again by
 24 Simon Hepworth at Astec, and if we can go to the second
 25 paragraph on page 1, so this is Simon Hepworth to

91

1 Joel Clarke, Mark Swift, and you're copied in. He says
 2 this in the second paragraph:

3 "Your email would indicate it is still Kingspan's
 4 view that K15 is fit-for-purpose over 18m. Is this the
 5 case? You have talked about non-combustible substrates
 6 yet, the main points of contention with regard to your
 7 8414 testing is that it was based on block work
 8 substrate not SFS with a sealed cementitious outer
 9 cladding. Neither of these conditions even remotely
 10 resemble what the proposed construction is here and you
 11 know it is the BRE's view that the use of K15 should not
 12 be specified on the basis of those test results."

13 Do you see that there?

14 A. Yes.

15 Q. Now, did you know that it was the BRE's view that the
 16 use of K15 should not be specified on the basis of the
 17 test results you had?

18 A. There was a complaint from the BRE, I think we discussed
 19 it yesterday, which ... which would allude to that,
 20 I believe.

21 Q. Is it right that after this, you were tasked with
 22 defending Kingspan's position in writing when challenges
 23 were raised about the use of K15 over 18 metres?

24 A. This was something that was always a requirement.

25 Q. Do you recall Tony Millichap saying to you that you

92

1 ought to defend Kingspan's position in writing?
 2 A. This was something that I was trained to do throughout
 3 my time at Kingspan.
 4 Q. Yes. Let's just quickly look at that, if we go to
 5 {KIN00009682}, and I want to look on page 1 at an email
 6 of 11 December 2013 at 19.30. We can see he says to
 7 you, Richard Bromwich, Mark Swift, Joel Clarke:
 8 "All, given Simon's comments below we will need to
 9 defend our position in writing. It is clear that he is
 10 beginning to position himself in the worse case event
 11 that cladding will need to be removed and who will cover
 12 the related costs.
 13 "I appreciate the need to keep installers onside
 14 however we also need to defend Kingspan.
 15 "Ivor do you have a draft response outlining the
 16 technical position?"
 17 Do you see that there?
 18 A. Yes.
 19 Q. Do you agree, as a result of being tasked to defend
 20 Kingspan's position, you knowingly misled a number of
 21 professionals about K15's performance in fire?
 22 A. We followed the strategy that was outlined within the
 23 previous document, so yes.
 24 Q. Yes.
 25 I now want to ask you a bit more about the NHBC. We

93

1 have already touched on them, and I want to ask you
 2 about dealings which Kingspan had with the NHBC in 2013
 3 and 2014. I can't take you to all of this, because we'd
 4 be here for a long time, and we will be asking
 5 Mr Millichap about some of this as well, but I'm going
 6 to try and cover the key events in the story with you.
 7 Now, if we look in your witness statement at page 46
 8 at paragraphs 103 to 104, at the top of page 46
 9 {KIN00022312/46} we ask you about the National House
 10 Building Council, the NHBC, and what your understanding
 11 was of the role and responsibilities of that
 12 organisation, and you say this, you say:
 13 "They claim to be one of the leading warranty and
 14 insurance providers for new homes in the UK."
 15 Then you say -- you're asked:
 16 "State what you know about the relationship between
 17 Kingspan and the NHBC during 2005-2014?"
 18 You say:
 19 "They were very important to the sales and use of
 20 Kingspan insulation in these sectors so when the CEO had
 21 questions about the use of K15 I was pulled off another
 22 project to immediately sit down with them and our Sales
 23 Director to discuss the information we had and what they
 24 wanted from us going forward."
 25 Do you see that there?

94

1 A. Yes.
 2 Q. So it's right, isn't it, that you were pulled off
 3 another project because Kingspan had received an email
 4 from John Lewis at the NHBC asking detailed questions
 5 about the compliance of K15 for use over 18 metres?
 6 That's right, isn't it?
 7 A. Yes, that is the case.
 8 Q. Yes.
 9 If we can go to a document {NHBC00000645/2}, I want
 10 to look at an email that John Lewis sends on
 11 13 December 2013 at 17.51. It's to the Kingspan
 12 technical enquiries email, copying in Steve Evans,
 13 Dave White, Graham Perrior. He says:
 14 "Hello ...
 15 "Thank you for your help so far.
 16 "I, and my managers here at NHBC, would very much
 17 like to resolve this issue with you as soon as possible.
 18 Could I request that you escalate it to your management
 19 team with a view to a meeting early in the new year
 20 between both parties?"
 21 Then he says this:
 22 "Unfortunately, given the number of affected
 23 projects that NHBC deals with, we feel that we need to
 24 start to advise our customers that K15 doesn't comply
 25 with the Building Regulation requirements or the BBA

95

1 certificate when used on a building in excess of 18m
 2 high.
 3 "I look forward to hearing from you as soon as
 4 possible."
 5 When John Lewis there says "given the number of
 6 affected projects that NHBC deals with", do you know
 7 approximately how many projects that might have been at
 8 that time?
 9 A. I'm not 100% sure, I've got a number of 230 in my head
 10 to do with something. I haven't familiarised myself
 11 with any of these emails --
 12 Q. Okay, I understand, I understand. But I think it might
 13 have been hundreds of projects?
 14 A. I'm not 100% sure.
 15 Q. Okay.
 16 You respond to this email at the top of the chain on
 17 page 1 {NHBC00000645/1} on 16 December 2013, if we can
 18 zoom in on that, and you say this:
 19 "Hi John,
 20 "Further to your correspondence with our Technical
 21 Team we would like to invite you up to our head office
 22 in Herefordshire in the new year, alternatively we can
 23 come to you. Having read your comments we request that
 24 you hold off on advising your customers until we have
 25 had a chance to sit down and go through the body of

96

1 evidence that leads to our alternative method of
 2 compliance. We appreciate the opportunity to talk you
 3 through this therefore the sooner we can have this
 4 discussion the better.”
 5 And you ask if he can propose dates for January and
 6 February -- that would be for 2014 -- so you can get
 7 something in the diary.
 8 Now, before you responded, would you have discussed
 9 the content of your response with your managers?
 10 A. Yeah, definitely.
 11 Q. Yes. You're referring there, in the third line down, to
 12 a body of evidence, you want to sit down with them and
 13 go through a body of evidence that leads to the
 14 alternative method of compliance. What body of evidence
 15 are you referring to there?
 16 A. Well, we're talking about all the test data we have,
 17 which was obviously the BS 8414-1 report, we were going
 18 to show them our small scale work, our internal tests,
 19 you know, we were quite frank and open with the NHBC
 20 once we got into these meetings.
 21 Q. I see. But for buildings over 18 metres, all you had in
 22 terms of relevant test data was at best the 2005 test,
 23 even though that was on a different product; yes?
 24 A. Yes, certainly. But we needed to push our thoughts
 25 about the other components. It was all coming down on

97

1 the insulation material's shoulders when actually the
 2 other components also have a right to prove their
 3 suitability above 18 metres.
 4 Q. And how did Kingspan plan to respond in terms of any
 5 structural steel frame projects?
 6 A. It was -- it was Kingspan's opinion that if
 7 a non-combustible substrate was offered, like
 8 a cement -- a non-combustible cement board behind the
 9 insulation, then the parameters would be similar to that
 10 of the part 1 test in 2005. Obviously we wholly accept
 11 that the cladding on the outside's different, but if
 12 it's really about the involvement up the face of the
 13 insulation, then the relevance of the internal substrata
 14 of the building is -- or the test is questionable.
 15 Q. Yes.
 16 A. That was our opinion.
 17 Q. You didn't have any test data that showed if you used
 18 a non-combustible substrate on a steel frame, the
 19 8414 test could be passed and the BR 135 classification
 20 criteria?
 21 A. No, we didn't at that time, no.
 22 Q. No.
 23 Was there some pressure on you at the time, at this
 24 time, with the NHBC to resolve this? Did you feel under
 25 pressure?

98

1 A. Oh, completely, yes. There was -- I was getting calls
 2 from many of the high-up people in the business to make
 3 sure that this was boxed out. They had a responsibility
 4 for a large number of buildings, and the thought of --
 5 I think, my understanding was the requirement of the
 6 BBA, getting a BBA certificate was mainly to keep the
 7 NHBC ... that was one of the key things about the
 8 BBA certificate, was it allows the NHBC to keep happy,
 9 so ...
 10 Q. But by this point they're not happy, are they?
 11 A. No.
 12 Q. Now, we know that you met with the NHBC on
 13 27 January 2014 at their offices in Milton Keynes. Can
 14 you help us, what are your recollections of what
 15 happened at that meeting with the NHBC? Can you
 16 remember what was said to them?
 17 A. I would have presented the information that we had to
 18 date, and then talked them through our needs for going
 19 out and pushing this request on to the other components.
 20 Because we couldn't get the cladding manufacturers to
 21 buy in, they were happily being used above 18 metres
 22 with our insulation or a non-combustible insulation, and
 23 they just weren't interested in doing BS 8414 testing.
 24 Q. So is it your evidence that you did actually pass to the
 25 NHBC a body of evidence which supported K15's use above

99

1 18 metres?
 2 A. We would have given them the part 1 test report, we
 3 would have showed them some videos, we would have showed
 4 them the class 0 reports. We discussed our strategy at
 5 length with them.
 6 Q. When you say you were open with the high-up people,
 7 first of all, what high-up people are you talking about
 8 at the NHBC?
 9 A. Well, I think it was Steve Evans and Graham Perrior. We
 10 explained what information we had and they came back
 11 saying "Well, that's all very well, but we want you to
 12 get somebody else to put this in writing as well".
 13 Q. Did you tell them at that first meeting that the
 14 BS 8414-1 test from 2005 had been carried out on
 15 a different K15 product?
 16 A. No, that wouldn't have been mentioned.
 17 Q. Did you tell them anything about the worsening in the
 18 fire performance that you witnessed in the 2007 and 2008
 19 tests?
 20 A. No, that was internal information only.
 21 Q. So you weren't completely open and transparent with
 22 them, were you?
 23 A. I would have been out on my ear if I'd told them that
 24 sort of information, so I couldn't.
 25 Q. Who else was with you from Kingspan at the time of this

100

1 meeting, was it Mr Millichap?
 2 A. I don't know whether it was Tony, Adrian, or
 3 Richard Burnley. I think we had about three meetings
 4 with them.
 5 Q. Yes.
 6 A. And Mark Swift was there in one of them as well.
 7 Q. It's right, isn't it, that ten days before this
 8 meeting -- so this meeting was on 17 January, and on
 9 7 January 2014 you had carried out a test to BS 8414-2
 10 at the BRE Burn Hall; that's right, isn't it?
 11 A. This was which test, sorry?
 12 Q. The January 2014 test.
 13 A. Can you remind me of the construction, and was that
 14 sponsored directly by Kingspan, was it?
 15 Q. Yes, it had K15 in it. It was the Trespa test.
 16 A. Oh, right, okay.
 17 Q. And that test was a fail, wasn't it? It was not
 18 successful?
 19 A. It wasn't successful, no.
 20 Q. Did you mention that to the NHBC at the meeting ten days
 21 later, that you had tested with a Trespa system just
 22 a few days before to part 2 and it had failed?
 23 A. I know that the BBA had witnessed this test. I can't
 24 quite recollect whether it came up, to be honest.
 25 Q. Okay, but you don't have a positive recollection of

101

1 telling the NHBC about that?
 2 A. I don't have any positive recollections of that meeting,
 3 no.
 4 Q. Okay.
 5 Now, around this time the NHBC began to ask Kingspan
 6 to provide written approval for the use of K15 over
 7 18 metres on a project by project basis. Do you
 8 remember that?
 9 A. Yes.
 10 Q. If we can go to {KIN00005894/1}, an email you send on
 11 3 February 2014, at 18.13, in the middle of that page,
 12 you say this:
 13 "Tony ..."
 14 So this is to Tony Millichap, high importance,
 15 "NHBC -- need your thoughts" is the subject.
 16 "Tony, I'm getting increasingly concerned about the
 17 number of K15 projects that the NHBC are involved in and
 18 the fact that they are referring to us for confirmation
 19 that the product is suitable. With this in mind if you
 20 can just check the letter below and give me your
 21 thoughts. I do not think I can do anymore apart from
 22 elude(sic) to our forthcoming test program, which is
 23 what we advised the NHBC we were doing ..."
 24 Then you have got some text:
 25 "Kingspan Insulation Limited during 2014 intend to

102

1 embark on a test program to further ..."
 2 I think what's happened after you have drafted this
 3 is Tony Millichap has suggested some alternative wording
 4 in here. Is that right? Can you remember that?
 5 I think we see that from the chain in a moment, but
 6 anyway --
 7 A. It's his blue font anyway.
 8 Q. Then we've got -- he's deleted "prove suitability", and
 9 he has written "extend the scope of use for" with his
 10 initials:
 11 "... of Kooltherm K15 in high-rise façades therefore
 12 would appreciate feedback on any combustible cladding
 13 systems that you are typically adopting in high-rise
 14 buildings."
 15 Then you say:
 16 "The reason the NHBC are asking for this information
 17 at the moment is because they do not want to say no to
 18 Kingspan however if we cannot provide the correct
 19 information they will say no. If you can provide your
 20 sign off to the letter below and suggest if it needs
 21 anything else it would be appreciated."
 22 Do you see that there?
 23 A. Yes.
 24 Q. Can you help us, why did the NHBC not want to say no to
 25 Kingspan? Why was that?

103

1 A. I think it's a matter of cost, really. A high
 2 performance insulation is considerably thinner than the
 3 non-combustible alternative. If the cladding zone is
 4 reduced, the footprint of the building can be expanded,
 5 the fixings, all the bracketry, everything is
 6 considerably reduced, there's massive cost savings to
 7 look towards a high-rise -- I'm sorry, massive cost
 8 savings to look towards utilising high performance in
 9 high-rise, or in any wall build-up.
 10 Q. So you think the NHBC were reluctant to stop using K15
 11 on buildings it was involved with because K15 was
 12 cheaper than other alternatives, and therefore
 13 advantageous to it?
 14 A. Yes, and I think maybe they'd gone down the route of
 15 a number of buildings already and they were worried
 16 that -- they needed us to provide more satisfactory
 17 information so they didn't have to maybe go back to
 18 those buildings and correct how it had been installed,
 19 maybe.
 20 Q. Yes, so they're also worried that they've got K15 on
 21 a lot of existing buildings?
 22 A. Yes.
 23 Q. And they don't want to have to go and take it all down?
 24 A. Yes, certainly.
 25 Q. You are saying here very clearly in this.

104

1 Email: "I'm getting increasingly concerned about the
2 number of K15 projects that the NHBC are involved in and
3 the fact that they are referring to us for confirmation
4 that the product is suitable."

5 What was Mr Millichap's response to your concerns as
6 expressed here?

7 A. Is there not anything in the email chain?

8 Q. Let's just look at the top of this page, to see. What
9 we get there is just:

10 "With some tweaks otherwise happy."

11 Do you see that?

12 A. Yes.

13 Q. So I don't think we've got anything in the emails we can
14 see where he's substantively responding to the concern
15 you're raising.

16 A. He's just saying, he's just editing my text and he's
17 happy with it.

18 Q. Do you recall having discussions with Mr Millichap at
19 this time that you were concerned about the position
20 with the NHBC and the lack of substantiation?

21 A. I was always concerned about the position of K15.

22 Q. Yes.

23 A. So, you know, like I say, I was -- I tried my best to
24 sit on my thoughts, because they didn't do me any
25 favours, but, you know, this was all a major headache.

105

1 Q. Yes.

2 A. It was more than a major headache, it was a nightmare.

3 Q. Yes.

4 Now, a few weeks after that exchange we've just
5 discussed, you send an email to the technical team about
6 K15 NHBC queries. If we go to {KIN00002163}, we can see
7 an email sent on 26 February 2014, so if we look at the
8 top of that page, 26 February 2014, you to Joel Clarke,
9 Matthew Ball, Matthew Evans, so people in the technical
10 team, is that right, technical officers in the team?

11 A. Yes, those are the frontline technical people, yes.

12 Q. The subject is "K15 NHBC queries", do you see that?

13 A. Yes.

14 Q. Then you write in the first paragraph:

15 "We are using the text below when the NHBC are
16 asking for confirmation that K15 is suitable for use
17 onto a SFS above 18 metres. The paragraph highlighted
18 in yellow can be amended to suit the project -- if you
19 have anything you feel we should add or remove please
20 let me know."

21 Then you say:

22 "Can we keep a note of the projects we send this
23 text out on and get the ASM ..."

24 What is the ASM?

25 A. Areas sales manager.

106

1 Q. "... to confirm if and when we get the order."
2 Do you see that?

3 A. Yes.

4 Q. We can see the generic text that would be sent out below
5 that, not in bold. So you have got a kind of
6 introductory paragraph about "Further to our previous
7 discussions", and then in the second paragraph below
8 that:

9 "It is our opinion that our Kooltherm K15 product
10 would be fit for purpose if installed onto a
11 non-combustible substrate, with horizontal cavity
12 barriers installed at centres not exceeding 3.5m."

13 Do you see that there?

14 A. Yes.

15 Q. Then:

16 "The test details we have reviewed of your project
17 show Kooltherm K15 fitted onto sheathing board. To be
18 in line with our test evidence and the LABC Registered
19 detail RD165 Kingspan Insulation Limited require that
20 K15 is mounted onto a non-combustible substrate; this
21 can be achieved with either a masonry layer, calcium
22 silicate or often more affordable magnesium
23 oxide/ silicate boards onto [a] Steel frame system."

24 Now, it's that paragraph that I think you're
25 highlighting and said could be amended to suit the

107

1 project; is that right?

2 A. Yeah, as to whether it was a steel frame system or
3 a masonry substrate, yeah.

4 Q. So you have highlighted in yellow to the team that
5 that's the one they can adapt for use in different --

6 A. Yes, a case of remove it or leave it, yeah.

7 Q. Yes.

8 You then go on:

9 "Kingspan Insulation ... have tested Kooltherm K15
10 successfully to BS 8414-1 ... in this test the Kooltherm
11 was fitted onto a non-combustible substrate ..."

12 So it doesn't say that's masonry there, does it?

13 A. No, we'd started using the terminology "non-combustible
14 substrate" --

15 Q. Yes.

16 A. -- like I said before because it opened the door to our
17 thoughts that part 1 tests could be used on steel frame
18 if the substrate wasn't penetrated.

19 Q. Yes.

20 A. And it was just really, you know ... and that could be
21 argued as well, I believe.

22 Q. Well, it could be argued, but you didn't really believe
23 that that was accurate, did you?

24 A. Yes, we're providing this information in good faith and
25 in recognition of the restrictive nature of this test.

108

1 Q. Well, I would suggest that you weren't providing it in
 2 good faith. What I would suggest is you're providing
 3 this text so that you can keep NHBC work using words
 4 which have no basis in the test data; would you agree?
 5 A. I can understand that, yes.
 6 Q. You agree?
 7 A. Yeah.
 8 Q. In January 2014, as we've just mentioned, there was this
 9 test on Trespa high-pressure laminate, it's
 10 8 millimetres. We will come back to talk about the NHBC
 11 again in a moment, but I just want to ask you a little
 12 bit more about that January test. It was an 8414-2 test
 13 undertaken in partnership with Astec Projects, and
 14 I just want to ask you: who decided on the build-up that
 15 was to be tested in that 8414 test, can you remember?
 16 A. I'm finding it hard to recollect whether that was one of
 17 the -- whether that was a directly sponsored test by
 18 Kingspan or that was something that Astec Projects had
 19 somewhat taken on themselves.
 20 Q. Right, can you remember who designed and constructed the
 21 rig for the test?
 22 A. It would have been Simon Hepworth at Astec Projects or
 23 one of his team.
 24 Q. Right, yes, but were you project managing it from
 25 Kingspan's side?

109

1 A. If that was one of the ones that I would have -- I would
 2 have had some involvement, yeah, definitely. I would
 3 have been the key person at Kingspan, probably.
 4 Q. Was the K15 that was tested in that test standard new
 5 technology K15?
 6 A. It would have been the latest off-the-shelf new
 7 technology K15 --
 8 Q. Okay.
 9 A. -- I believe. However, there was some work done with
 10 some fire retardant products as well around this time,
 11 so ...
 12 Q. Yes. We're going to come back to that.
 13 A. I'm struggling to be clear on that, to be honest.
 14 Q. Yes, let me try and help you. There is a PowerPoint
 15 presentation that you did in May 2015, if we can look at
 16 this, {KIN00021945}. It's a document dated 18 May 2015,
 17 and it would appear to be a presentation you put
 18 together. Do you see that there?
 19 A. Yes.
 20 Q. Can you remember this?
 21 A. Yes, I think so.
 22 Q. Yes. So it's headed "The façade insulation solution",
 23 and if we can go to slide 17 {KIN00021945/17}, we can
 24 see it's under the heading "Testing to date". Do you
 25 see that there?

110

1 A. Yes.
 2 Q. If we go down to the January 2014 test, towards the
 3 bottom of that page, three lines up, do you see that,
 4 January 2014?
 5 A. Yeah.
 6 Q. Sponsor is Kingspan, the thickness is 80 millimetres,
 7 the product is K15, and then under "Formula/facer" in
 8 the next column, it says "25 micron unperforated". Can
 9 you see that?
 10 A. (Pause). I can see that, yes. I'm just struggling ...
 11 I thought we had a lot of issues producing the
 12 unperforated product.
 13 Q. Right. If we keep looking along the columns, it talks
 14 about fire barriers at 75 mm and then high-pressure
 15 laminate, the 8 millimetres Trespa FR panel, so that was
 16 the outer cladding.
 17 Would you agree that the K15 that was being sold and
 18 had been sold since 2006 had a perforated 25-micron
 19 facer?
 20 A. Yes, that's correct.
 21 Q. Yes. So can you help us as to whether this product
 22 might have been some kind of research and development
 23 product just for the testing with an unperforated facer?
 24 A. It looks to be, but I can't recollect this.
 25 Q. Okay.

111

1 A. The BRE would have samples of this board, wouldn't they?
 2 They should have.
 3 Q. Is it your understanding that the BRE, what, keep
 4 samples?
 5 A. They retain a little bit of each. Specifically with the
 6 latter tests, what I wanted was I was driving towards
 7 Kingspan to get certification for our test method, so
 8 what we could do, we could tie the test back to the
 9 material, to the production run, and then when they came
 10 in and audited that would allow them to sort of identify
 11 the product. It would also ensure that I could maintain
 12 congruence of the formulation against the test result
 13 and stop the product, you know, being developed in ways
 14 that were not suitable for the testing.
 15 Q. But you can't help us here as to why we're seeing
 16 an unperforated facer there?
 17 A. I can't recollect at the moment, to be honest.
 18 Q. No.
 19 A. I know I lobbied for an unperforated version, but I've
 20 just got a feeling that we could never manufacture that,
 21 or Kingspan could never manufacture that.
 22 Q. Okay. Do you remember --
 23 A. Sorry, there was a solstice additive which might have
 24 helped with that.
 25 Q. Yes, I'm coming to the solstice. I think we see that

112

1 coming in the March 2014 and July 2014 tests, do you see
 2 below that?
 3 A. Yes.
 4 Q. Let's leave that for the moment, because I want to deal
 5 with that when we get to those tests. Just back to the
 6 January 2014 tests, it's right, isn't it that it was a
 7 fail both in relation to the thermocouple temperatures
 8 and because flames were above the rig?
 9 A. That's correct, yes.
 10 Q. Then if we can look at an email chain now from
 11 January 2014, this is {KIN00021905/2}, and I want to
 12 look at an email of 9 January 2014. So this is
 13 an email -- sorry, bottom of page 2 and on to page 3
 14 {KIN00021905/3}. Actually I think it may be -- if we
 15 can go up to the bottom of page 1 and on to page 2.
 16 I may have an incorrect reference there.
 17 (Pause)
 18 Sorry, I think you have got 219 -- the reference
 19 isn't right. So it's {KIN00021095/2}, at the bottom,
 20 and on to page 3 {KIN00021095/3}, it starts there on
 21 9 January 2014 at 17.35, and the subject is "15 mins",
 22 15 minutes, and you say:
 23 "If you look to the back page you will see where the
 24 15-minute reference comes from."
 25 And on to page 3 {KIN00021095/3}, then you give

113

1 an extract, I think, from BR 135. Is that right? That
 2 looks like an extract from BR 135 and the external fire
 3 spread success criteria.
 4 A. Yes, I believe so.
 5 Q. What this appears to be is a discussion about what had
 6 happened in the January 2014 test?
 7 A. That's correct.
 8 Q. If we go in the next email from Malcolm Rochefort,
 9 9 January 2014, at 18.57, on page 2 {KIN00021095/2}, he
 10 says to you and to Tony Millichap and others, 9 January:
 11 "That implies we only just failed?
 12 "Regards, Malcolm."
 13 Do you see that there?
 14 A. Yes.
 15 Q. If we go up again {KIN00021095/1}, we see on 13 January,
 16 at 6.55, a longer email from you, with the heading
 17 "BS 8414 Test update". Then you say:
 18 "From the external temps it does look very close,
 19 the temperatures in the cavity where(sic) a little
 20 higher but still close to the 15-minute window. Ideally
 21 we need to pass with a 10% window for assessment.
 22 Anything to close will impeded the BRE's ability to
 23 provide practical tests assessments."
 24 Do you see that there? Then you say:
 25 "Because of this closeness TM suggested 'it would be

114

1 so easy to go too far at this point. Therefore we
 2 should find a balance whilst ensuring we get
 3 a result ..."
 4 Do you see that? So you seem to be reporting
 5 a comment from Tony Millichap; is that right?
 6 A. It seems that way, yes.
 7 Q. He said:
 8 "It would be so easy to go too far at this point.
 9 Therefore we should find a balance whilst ensuring we
 10 get a result."
 11 Can you help us with what he meant by that, or what
 12 you understood him to mean by that?
 13 A. Can I just look at the end of that email?
 14 Q. Yes. So if we keep going, you say:
 15 "It's with the above in mind and after an extensive
 16 review of the test video and data we are looking to
 17 propose/consider the following."
 18 Then what you do in the next part of the email, if
 19 we go over the page {KIN00021095/2}, is you propose
 20 various changes to how the test is carried out, and you
 21 say at 1 you could:
 22 "Slightly raise both cavity barriers to maximise
 23 their influence and extend [the] width.
 24 "2. Consider reducing perimeter air tightness to
 25 limit the effect of oxygen draw ...

115

1 "3. Reposition panels to maximise venting below
 2 barriers and increase security above ...
 3 "4. Consider replacing 10mm cladding panels with
 4 15mm pending outcome of small lab LBA test.
 5 "5. Adopt modified K15 (solstice) ref discussions
 6 in meeting. As soon as this is made if I can get
 7 samples ... and calorimetry ... of any variants of the
 8 solstice board we should try and get them to Exova
 9 quickly to see if there is any difference in initial
 10 flammability/calorific output.
 11 "Adopt a closed vertical joint ... or put a T
 12 directly behind ..."
 13 Then you have put a little star about replacing the
 14 panels with a 15mm board and you talk about you're
 15 struggling to get hold of samples, and then at the very
 16 end you say:
 17 "I'm at the BRE on Wednesday to dismantle and to
 18 assess the damaged areas, hopefully the data will be
 19 calibrated therefore if you have any questions please
 20 let me know."
 21 A. I think Tony's trying to -- I think I'm being bombarded
 22 by questions about this and he understands where my head
 23 needs to be and what I need to be doing at this time,
 24 and he's just sort of saying "Look guys, just take
 25 a step back" I think a little bit and, you know, we just

116

1 need to look at it once we've got a real test report,
 2 I think. Because of the expenditure of these tests and
 3 the interest to the business there was a lot of "Oh,
 4 what happened?" and that sort of thing but, you know,
 5 until you've got a test report in front of you with
 6 agreed calibrated thermocouple data, you're only going
 7 on what you assumed or saw at the day.
 8 MS GRANGE: Yes, I see.
 9 Mr Chairman, I do want to come back to this email,
 10 but I think that's a good moment.
 11 SIR MARTIN MOORE-BICK: You would rather stop there?
 12 MS GRANGE: Yes, please.
 13 SIR MARTIN MOORE-BICK: Right, we will stop there for some
 14 lunch and come back at 2 o'clock, please, and in the
 15 meantime please don't discuss your evidence or anything
 16 to do with it with anyone. Thank you very much.
 17 (Pause)
 18 Good, 2 o'clock, then, please.
 19 MS GRANGE: Thank you.
 20 (1.02 pm)
 21 (The short adjournment)
 22 (2.00 pm)
 23 SIR MARTIN MOORE-BICK: All right, Mr Meredith?
 24 THE WITNESS: Yes. Thank you.
 25 SIR MARTIN MOORE-BICK: Thank you very much. Yes,

117

1 Ms Grange.
 2 MS GRANGE: Yes, thank you.
 3 I just want to pick up on one point arising from
 4 this morning's evidence before we then pick up where we
 5 left off. So we looked at the BBA certificate, the
 6 revised issue certificate from 2010. If we could bring
 7 that up again, that's {BBA00000037}.
 8 You were asked some questions from the Chairman
 9 about the image there on the right, showing a steel
 10 frame system. Is it right that this certificate would
 11 apply to buildings above and below 18 metres?
 12 A. This is a general Kooltherm K15 certificate that's
 13 supposed to apply to all areas of K15.
 14 Q. Yes. But it's right, isn't it, that in the image we
 15 don't see any clear delineation whether that system
 16 could be used above or below 18 metres?
 17 A. No, not at all, it's just a general illustration.
 18 Q. Picking up where we left off, if we can go back to
 19 {KIN00021095}, we were looking at your longer email that
 20 starts at the bottom of that page. If we could go over
 21 the next page {KIN00021095/2} to where you are
 22 identifying the types of modifications you're
 23 recommending for future testing. Do you remember that?
 24 A. Yes.
 25 Q. I want to ask you a little bit more about the fifth

118

1 modification you are proposing there:
 2 "Adopt modified K15 (solstice) ref discussions in
 3 meeting. As soon as this is made if I can get samples
 4 for O2 index and calorimetry (2 x 400x400mm) of any
 5 variants of the solstice board we should try and get
 6 them to Exova quickly to see if there is any difference
 7 in initial flammability/ calorific output."
 8 Now, can you just help us, what was "K15
 9 (solstice)"?
 10 A. I believe solstice was a modified -- I think it was
 11 a modified blowing agent, I can't recall directly --
 12 Q. Was it a liquid blowing agent different to the pentane
 13 blowing agent? Do you remember that?
 14 A. I think it was, yeah. I can't say definitely.
 15 Q. So where we see solstice blown, that's referring to that
 16 blowing agent; yes?
 17 A. I believe so, yes.
 18 Q. Is it a more environmentally friendly blowing agent
 19 with, for example, a non-ozone depleting chemical
 20 composition?
 21 A. I think Kingspan had been producing with zero ODP or low
 22 ozone depleting blowing agents for some years, so this
 23 is just the latest variant of the material that's being
 24 talked about at the R&D meeting, so I'm trying to get
 25 some produced so we can test it quickly.

119

1 Q. Yes. So had you been present at some discussions in
 2 meetings where K15 solstice blown had been discussed?
 3 A. I would have been, if it was the fire focus group or the
 4 technical lamination meeting, probably, yes.
 5 Q. Were you also proposing to add fire retardants to that
 6 board for the purposes of testing?
 7 A. I was not proposing to add fire retardants for the
 8 purpose of testing, I was proposing that any
 9 modifications that could be made would be made to K15
 10 for the purposes of their inclusion to make the product
 11 a better product.
 12 Q. Right, yes. You say there if there's any variants of
 13 the board you should try and get them to Exova quickly
 14 to see if there's any difficulty in flammability or
 15 calorific output. Can you help us, what was the outcome
 16 of that? Did that happen? Did Exova give you some
 17 information about its fire performance?
 18 A. If I recollect, at the time this was a constantly moving
 19 animal. Kingspan were constantly introducing new
 20 chemicals, sometimes they would disappear because they
 21 couldn't, we couldn't afford them, we couldn't get
 22 a supply of them, sometimes they were proven that they
 23 weren't viable because for other reasons they didn't
 24 support the thermal conductivity that we wanted for the
 25 product. I think fire was always seen as very much

120

1 secondary, whereas I was trying to pitch fire as the
 2 most important characteristic for K15.
 3 Q. Going back to my question, can you recall what the
 4 outcome was of any testing and the difference?
 5 A. I don't know any -- I can't recall direct results, to be
 6 honest.
 7 Q. Okay. If we go up to the next email in the chain, we
 8 can see it's from Malcolm Rochefort, up on page 1
 9 {KIN00021095/1}. He says on 13 January 2014 to you and
 10 Tony Millichap and others, he says:
 11 "Ivor, agree with all, except move to Solstice, as
 12 rest are merely tweaks to the test.
 13 "Suggest any recipient calls me back to discuss
 14 rather than email correspondence, which will get too
 15 complicated.
 16 "Regards, Malcolm."
 17 Do you see that there?
 18 A. Yes, I do.
 19 Q. Can you recall, why was he saying he's happy with all of
 20 that except the move to solstice? Can you remember what
 21 his position was on that?
 22 A. I don't know exactly what his position was, but it could
 23 have been that solstice was not a viable option because
 24 of the -- it didn't support the thermal conductivity
 25 that we desired for the material. So -- and maybe

121

1 I wasn't au fait with that, and he was just suggesting,
 2 why were we talking about that. Like I say, I wasn't
 3 directly involved in the chemical side.
 4 Q. Okay, and did you ever get a clearer picture as to why
 5 he didn't want to discuss this in email correspondence?
 6 He says it will get too complicated there, but did you
 7 ever become aware that there was another reason for --
 8 A. Malcolm was always very reserved about what we put in
 9 writing. I think I was told off a few times for maybe
 10 being too illustrative in emails, really.
 11 Q. Why was he more reserved about what you put in writing?
 12 A. He'd been through -- he'd been through a large legal
 13 case with Rockwool, I think.
 14 Q. Yes.
 15 A. And, you know, he knew how these things could
 16 potentially be taken out of context and come back to
 17 bite you, basically.
 18 Q. Was that when there was an action by Kingspan against
 19 Rockwool in relation to how it represented its products?
 20 A. Yeah, yeah, yeah, that was the case, yeah.
 21 Q. He had been through that?
 22 A. Yeah.
 23 Q. And he was, what, worried about committing things to
 24 email?
 25 A. I think that might be what he's referring to here, yeah.

122

1 Q. If we go above this, Tony Millichap then writes to you
 2 and says, just to you, on 14 January, it's the second
 3 email down there:
 4 "Hi Ivor.
 5 "Malcolm's response was cryptic? Let me know his
 6 thoughts over the solstice element."
 7 Then you respond at the top:
 8 "Will do (he is in meetings today) ... Also
 9 I edited your comments as I thought he would be
 10 concerned over us putting too much in black and white."
 11 So does that go back to --
 12 A. That verifies what I was saying before, yeah.
 13 Q. Yes, that you were aware that Malcolm Rochefort didn't
 14 like you putting too much in writing about this?
 15 A. (Witness nods).
 16 Q. Because he was nervous about if this ever came out, yes?
 17 A. Potentially, yes.
 18 Q. Yes.
 19 A. I agree.
 20 Q. Let's go now to the March 2014 test, that was on Trespa
 21 decorative rainscreen, on 19 March 2004(sic). It was
 22 a test to BS 8414-2 with 80 millimetres Kingspan K15 and
 23 this Trespa decorative rainscreen board, and it was not
 24 successful due to flaming above the rig; is that right?
 25 A. I believe so. I would have to see the report, but yeah.

123

1 Q. Can you remember what K15 was tested on that occasion?
 2 A. I can only recollect, because I saw it in the emails
 3 earlier, was it not a 50-micron foil, or ...?
 4 Q. Yes. Let's look at your PowerPoint presentation again
 5 to try and help you. {KIN00021945/17}, and within this
 6 at 17 we can see the March 2014 8414 test one line up
 7 from the bottom. Yes, there you can see it says,
 8 according to this presentation, "50-micron unperforated
 9 Sol". Does the "sol" mean solstice blown?
 10 A. That would be a solstice blown material, yes.
 11 Q. As you have pointed out, 50 microns is double the
 12 thickness in relation to --
 13 A. Of the foil component.
 14 Q. Of the foil, yes, whereas the standard foil would be
 15 perforated and 25-micron; that's right, isn't it?
 16 A. That's correct, yes.
 17 Q. And here you have got unperforated again in this
 18 schedule; do you see that?
 19 A. Yes, that's correct.
 20 Q. Can you confirm that this was a research and development
 21 product which was solstice blown, with that thicker
 22 foil facer?
 23 A. We -- as far as I was aware, Kingspan were looking to
 24 move towards solstice, so although these were research
 25 and development tests, if they proved viable they would

124

1 become full tests. That's why we'd always approach the
 2 test house with "this is going to be a full test but if
 3 it doesn't work treat it as an indicative".
 4 Q. Yes, was the BRE aware that this was not standard K15
 5 when the tests were being carried out, or this test was
 6 being carried out?
 7 A. I'd say that they knew that we were developing and
 8 improving the product, I had had that discussion with
 9 them, I was asking them to record batch numbers and like
 10 production dates and things like that, and I did
 11 actually get them to come in and sample a batch around
 12 that time, because I was looking -- we were confident of
 13 the improved performance and we were looking potentially
 14 to get an LPCB approved BS 8414 approach. So we did get
 15 them to retain samples, because if the test had been
 16 successful then we could have gone down this route.
 17 Q. I see.
 18 A. So -- but we didn't go into too much information about
 19 what the exact chemical components were, because these
 20 were confidential secrets within Kingspan that would
 21 only be exposed to the BRE if we had them involved from
 22 a certification perspective.
 23 Q. And who was it at the BRE that took the samples, as far
 24 as you understood?
 25 A. I think the BRE use a BBA agent to come and sample the

125

1 product.
 2 Q. Right, yes.
 3 A. So under the European guidance, I think the BBA are
 4 a body that can actually do that, they can come into
 5 a laboratory or come into a production facility and sign
 6 products as proved standard from standard production
 7 or --
 8 Q. Yes.
 9 A. -- taken out of the warehouse.
 10 Q. Now let's look at an email chain after this test has
 11 been carried out. If we can go to {KIN00021907/3}, at
 12 the bottom of the chain, and it starts there on
 13 21 March 2014 with you -- blow that up -- enquiring of
 14 Stephen Howard of the BRE, you say:
 15 "Any thoughts?"
 16 On Kingspan 8414 testing, do you see that there?
 17 A. Yes. This might be a response to a telephone call or
 18 messages I've left him or something.
 19 Q. Yes, and then the response comes from Stephen Howard
 20 above, on 25 March, there, and he says to you, copying
 21 in Phil Clark:
 22 "Ivor,
 23 "I discussed the test with Phil and the current
 24 status is that you do not have a clear pass.
 25 "We need to review the video footage of the test and

126

1 make a decision based [on] this.
 2 "Phil is out sick (I was out yesterday) so I am
 3 trying to establish where things have got to.
 4 "I will update later today."
 5 Do you see that there?
 6 A. Yeah, I think there was some question over the --
 7 whether it did or did not achieve the criteria.
 8 Q. Yes, we're going to come on to that. Then we see that
 9 you send this response on, if we go up in the chain to
 10 the next one in the chain {KIN00021907/2}, on
 11 31 March 2014 at 13.23, you send an email internally
 12 within Kingspan to a number of others, including
 13 Tony Millichap and Malcolm Rochefort. You write there:
 14 "Initial feedback from the BRE is that this test did
 15 not meet the requirements of BR 135 3rd edition."
 16 Pausing there, that third edition had come in in
 17 2013, hadn't it, so the year before this?
 18 A. Okay. If that -- yeah, if that's the case, yeah.
 19 Q. Yes, then you say:
 20 "This is by no means the end of this as we will be
 21 challenging this opinion and doing everything possible
 22 to get something usable out of the testing. Whether
 23 this be an assessment for a different cladding or
 24 a shorter build, or we try to get them to issue a report
 25 based on the earlier version of the standard."

127

1 Do you see that there?
 2 A. Yes.
 3 Q. Now, just pausing there, how could you get the BRE to
 4 issue a classification report based on an earlier
 5 version of BR 135, ie the second edition from 2003, and
 6 not the most recent version from 2013? How did you
 7 think you were going to do that?
 8 A. I think we were very hopeful in asking for such a thing.
 9 Q. Yes.
 10 A. It was just one of the ideas that was bandied about at
 11 the time.
 12 Q. If you remember, it's right, isn't it, that in that
 13 third edition it made it clear that if the flames got to
 14 the top of the rig, if there was that failure within
 15 60 minutes, it was a failure, do you remember that?
 16 A. Where we went wrong with this is we hadn't paid close
 17 enough attention to the height of the rig, we'd actually
 18 continued the system up above the recommended height, so
 19 the surface burning continued above that quite readily.
 20 Q. Right.
 21 A. And we were of the opinion that if the rig hadn't been
 22 built to that height, then it might not have continued
 23 to that height, basically.
 24 Q. Did you ever raise that issue with the BRE, if that was
 25 the issue in play, ie the height of the rig, do you

128

1 remember ever raising that?

2 A. I think there must have been discussions, but I can't

3 recollect directly.

4 Q. At the end of this email, you then say:

5 "I shall know by the end of the week when I will

6 need the insulation for the next test by. However the

7 question remains about the insulation we choose to use.

8 Is it possible to share the calorimeter results of the

9 solstice vs standard vs phosphoric that we performed at

10 FTT last week?"

11 What's FTT?

12 A. Fire testing technology, I think.

13 Q. Right. And you ask again:

14 "Does this support our views on the

15 flammability/ calorific content of the different PF's?

16 This would be good to look at alongside the video."

17 So you're obviously still trying to explore other

18 options in terms of different types of K15 for the next

19 test; do you agree?

20 A. Yeah, definitely.

21 Q. Who are you asking to share the results? Who is it that

22 you want the --

23 A. That would be Linzi Hobbs and Gwyn Davies. I pushed for

24 many years for us to get a calorimeter that we could use

25 for factory production control, so we could maintain

129

1 congruent formulations specifically for products like

2 K15 where fire performance was critical. So they

3 finally agreed to procure one of those machines, but

4 prior to that they went to FTT and did a bit of a round

5 robin of all the materials.

6 Q. Right, I see.

7 A. I don't know if I ever saw that data, to be honest.

8 Q. That was my next question. Did you ever get the data?

9 A. I don't know if I did.

10 Q. Okay, yes. Who was it who chose the insulation for the

11 next K15 test, can you remember? That would be the one

12 that was done in July 2014.

13 A. It would have been an agreement with the -- those within

14 that email.

15 Q. Yes. So it would have been a joint decision?

16 A. Yeah, but --

17 Q. Yes.

18 A. By this sort of time, everybody was involved in the

19 steps we were taking to improve K15.

20 Q. Yes. If we go further up the email chain

21 {KIN00021907/1}, there's another email above of

22 31 March 2014 at 14.01 in the middle of that page, from

23 Tony Millichap to that group. He says this:

24 "All, let's not forget we are carefully pushing BRE

25 for the result, typically this is not issued without the

130

1 full report after 4-5 weeks. In the short term we are

2 just trying to understand our options whilst waiting for

3 the full data and trying to sow some seeds to influence

4 that result. In the event we do not get what we aimed

5 for stronger tactics will be employed."

6 Then he says:

7 "Obviously Lindsay is welcome to attend

8 a dismantle ..."

9 Then he goes on and says:

10 "I will concurrently employ our solicitor to ensure

11 they are fully briefed to support a challenge or defend

12 against any ongoing contracts."

13 Do you see that there?

14 A. Yes.

15 Q. Looking back at that first paragraph, where he says

16 "trying to sow some seeds to influence [the] result",

17 what seeds were sown to influence the result to your

18 knowledge?

19 A. I think Tony had highlighted to me some ambiguity in the

20 way that BR 135 was written or the actual -- yeah. So

21 I remember at the time he felt he had a case for arguing

22 that -- because what we wanted from this test, yeah, it

23 wasn't a great result, but we wanted it to be considered

24 in our body of evidence.

25 Q. So is your evidence that this sowing the seeds were

131

1 arguing back to the BRE about whether or not the test

2 was a pass?

3 A. Yeah, certainly.

4 Q. Yes. What about --

5 A. Sorry, the BRE didn't -- it wasn't -- normally after the

6 test they give you the green light, but in this scenario

7 they were very much sort of on the fence with it, they

8 needed to consult their assistants and et cetera,

9 because they didn't know whether it was definitely

10 a fail.

11 Q. Right. What about the stronger tactics? He says:

12 "In the event we do not get what we aimed for

13 stronger tactics will be employed."

14 What was your understanding when you received this

15 of what he was meaning there?

16 A. I don't know what stronger tactics could be employed,

17 really, to be honest, but ...

18 Q. Could it be threatening legal action? As he then

19 implies at the end of that email he's going to employ

20 the solicitor to ensure they're fully briefed to support

21 a challenge, could that be one of the stronger tactics?

22 A. It reads like that, yes.

23 Q. Anything else? Were you ever aware of any other

24 stronger tactics being employed?

25 A. No.

132

1 Q. You said yesterday that there was an assertive culture
 2 within Kingspan. Would you agree that by this time --
 3 and I may ask you this again once you've seen some more
 4 exchanges with the NHBC -- that actually the culture has
 5 become aggressive within Kingspan in terms of trying to
 6 defend the indefensible?
 7 A. They adopt a very pushy approach, yes.
 8 Q. Yes, you would be happy to say very pushy?
 9 A. Yeah.
 10 Q. Do you accept that the final decision on whether or not
 11 the system could be classified to BR 135 rested with the
 12 BRE and not Kingspan's own opinion?
 13 A. Certainly.
 14 Q. Then if we go to the top email in this chain, this is
 15 an email that Tony Millichap -- sorry. Actually it's
 16 a different chain. Let's go now to {KIN00010461}. Yes,
 17 so this is an email that Tony Millichap then writes to
 18 Stephen Howard at the BRE on 7 May 2014, and he's copied
 19 in there, if you see under the cc list, you and
 20 Toby Randal who appears to be from Fenwick Elliott
 21 solicitors, do you see that there?
 22 A. Yes, I do.
 23 Q. He says:
 24 "Hello Stephen,
 25 "We write further to our ongoing correspondence and

133

1 prior to our meeting later this week in connection with
 2 the above, we would confirm the following."
 3 He says in the second paragraph that he's just
 4 received the full thermocouple data and the video
 5 footage, and he says in the second line:
 6 "... it is clear the pass fail criteria for the
 7 first stage of the test was met all as per the original
 8 indications ... It is our firm belief the second
 9 section of this test does not have a pass/fail criteria
 10 this being confirmed within BR 135 ... and is for
 11 recording observations only."
 12 So he is trying to say that observing it to the full
 13 60 minutes was from observation only and wasn't part of
 14 the pass/fail criteria. That's right, isn't it?
 15 A. That was his interpretation, yes.
 16 Q. He says:
 17 "It should also be noted it was confirmed
 18 immediately after the test by your Mr Phil Clark that
 19 the test ran to a full 1 hour duration and was not
 20 terminated ..."
 21 So he is also saying Phil Clark had said that it ran
 22 to the full one hour and was not terminated.
 23 "... we do accept that some transient flaming was
 24 evident above the full rig height although would not
 25 classify this as flame spread as referenced in the

134

1 standard, the insulation/fire barrier at this point was
 2 not compromised in any way and the test ran full
 3 duration."
 4 So he is arguing the case based on the video
 5 evidence about this. Then he says:
 6 "For clarity based upon data received we would
 7 interpret this as a positive result against the BR135
 8 assessment criteria and should this be interpreted any
 9 other way by yourselves we would intend to appeal the
 10 result formally."
 11 Do you see that there?
 12 A. Yes.
 13 Q. Was this an attempt by Tony Millichap to put pressure on
 14 the BRE?
 15 A. It looks that way, yes.
 16 Q. Including copying in a solicitor to this correspondence.
 17 Were you aware that that's what he was intending to do?
 18 A. That's -- Toby Randal was one of the company solicitors,
 19 so yes. One of the issues here was that Kingspan felt
 20 the cladding was the cause of the failure. The surface
 21 spread of flaming was on the front of the cladding --
 22 Q. That doesn't matter, does it?
 23 A. But it wasn't necessarily the involvement of the
 24 insulation. So we were looking, you know, we weren't
 25 expecting a perfect test result, but we were expecting

135

1 something that we could use to talk about our material
 2 and to build up our body of evidence. But yes, I can
 3 see where you're coming from with this.
 4 Q. It's a full system test and it may be that in one
 5 particular system the cladding panels have more of
 6 a contribution, in another it's more the insulation.
 7 But doesn't that demonstrate the need for it to be
 8 a system test and only then used where that system is
 9 replicated?
 10 A. Yeah, certainly.
 11 Q. If we go to BR 135 third edition, if we bring up
 12 {CEL00003364}, this is the third edition, it came out in
 13 2013, and we look at page 31 {CEL00003364/31} under B2,
 14 you see there in the middle of that page, B2, it says
 15 there in the second sentence:
 16 "In order for a classification to be undertaken the
 17 system must have been tested to the full test duration
 18 requirements of BS 8414-2 without any early termination
 19 of the full fire-load exposure period."
 20 Do you see that?
 21 A. Yes.
 22 Q. So BR 135 third edition was very clear that the full
 23 60-minute duration was relevant, wasn't it, and any
 24 early termination within that full 60 minutes resulted
 25 in a failure?

136

1 A. But was that test terminated early?
 2 Q. I think that's what they're -- isn't that what they're
 3 saying? (Pause). Let's go now to {BRE00003576}.
 4 I want to look at Tony Millichap's email of 7 May, it's
 5 been acknowledged by the BRE complaints co-ordinator, on
 6 8 May 2014 at 16.04, at the bottom of that page, do you
 7 see, that, 8 May 2014:
 8 "Dear Mr Millichap,
 9 "I refer to your email dated 7 May 2014 ... I am
 10 responding in my capacity as Complaints Coordinator for
 11 BRE Global ..."
 12 Do you see that there?
 13 A. Yes.
 14 Q. She says at the end of that paragraph:
 15 "I have taken this to mean that you intend to lodge
 16 a formal complaint."
 17 Tony Millichap responds at the top email in the
 18 chain, if we can go to that, and you're copied in to
 19 this:
 20 "Hello Marian,
 21 "Many thanks for acknowledging our position. My
 22 interpretation of the current situation is that we do
 23 not yet have the formal results, my comments were based
 24 upon Stephen's initial assessment which we are to
 25 discuss further tomorrow."

137

1 Do you see that there?
 2 A. Yes.
 3 Q. So "tomorrow" would be 9 May 2014. Were you present at
 4 that meeting that then happened the day after, do you
 5 recall that?
 6 A. I had many meetings with Stephen Howard. I think
 7 I should have been, but I'm not 100% sure.
 8 Q. Can you remember whether it was at that meeting that the
 9 BRE explained their interpretation of the test to you
 10 and whether it was a pass or a fail?
 11 A. I can't recollect directly, to be honest.
 12 Q. Was the result of this meeting that the BRE wouldn't
 13 agree with your opinion on this test?
 14 A. I don't believe it was agreed with, no.
 15 Q. How could you have used this test data in any event,
 16 since you all knew that it was carried out on a solstice
 17 blown version of K15 with a 50-micron foil facer? That
 18 wasn't going to help you with the K15 currently in the
 19 market, was it?
 20 A. I think it was an understanding that if we found
 21 a solution that was working, then that was what K15
 22 would evolve into.
 23 Q. I see.
 24 A. So that's how all the research and development worked.
 25 You would try a new chemical or a new facer, and if it

138

1 met the criteria and it could be procured effectively,
 2 then we'd actually run with it.
 3 Q. Yes. It's right, isn't it, that the system tested on
 4 19 March 2014 was never classified to BR 135, was it?
 5 A. I don't believe it was.
 6 Q. No.
 7 Now, around this time that you're getting pressure
 8 from the NHBC in 2013 and 2014, it's right, isn't it,
 9 that Wintech also started raising more significant
 10 concerns? Do you remember that?
 11 A. I believe so, yes.
 12 Q. Were you aware that in October 2013 Malcolm Rochefort
 13 had met with Wintech and Wintech had asked Kingspan to
 14 commit to undertaking tests to 8414-2 and providing test
 15 data within six months? Were you made aware of that?
 16 A. I think so, yes.
 17 Q. It's right, isn't it, that otherwise Wintech intended to
 18 recommend to all of its clients that K15 could not be
 19 used for façades over 18 metres? That's right, isn't
 20 it?
 21 A. As I understand, yes.
 22 Q. Now, in terms of the situation with the NHBC, there was
 23 another meeting between Kingspan and the NHBC on
 24 2 April 2014. That's right, isn't it?
 25 A. Yes.

139

1 Q. Can you recall what you told the NHBC at that meeting
 2 about K15 and its use above 18 metres?
 3 A. I can't recall directly without looking at the minutes.
 4 Q. Okay.
 5 A. Sorry, it would have been something along the lines of
 6 what -- where we were up to, what we -- or what our
 7 latest approach was, I think.
 8 Q. But you weren't able to provide any evidence of
 9 successful testing to BS 8414-2, were you?
 10 A. No, not at that time.
 11 Q. Can you remember how the situation was left with the
 12 NHBC, as you understood it?
 13 A. I think it was that it wasn't the best after that
 14 meeting.
 15 Q. No.
 16 A. No.
 17 Q. Can we look at an email, {NHB00000703}. This is where
 18 you are updating the NHBC, including Steve Evans,
 19 Richard Bromwich, and copying in others, about
 20 Kingspan K15. Do you see that there?
 21 A. Yes.
 22 Q. You initially apologise for the delay in responding.
 23 This is June 2014. You say you're:
 24 "... responding to your email as Richard has moved
 25 from Business Development Manager to our Director of

140

1 Sales therefore is currently busy settling in to his new
2 role and asked me to respond on our behalf."

3 Then you say in the second paragraph:

4 "At the last meeting I presented the test completed
5 in March that we are still in negotiation with the BRE
6 about; as advised the system tested (which was a more
7 onerous cladding that we intended would represent the
8 majority of the cladding market) met the 30 minute
9 criteria of the BS 8414-2 however some on-going burning
10 on the face of the cladding panel in the observation
11 period caused them to deem this a failure. It should
12 however be noted we feel the system met the requirements
13 and if the test were clearly a 30 minute test there
14 would be no question that this would be fully compliant
15 with BR 135, there is however some ambiguity within the
16 test standard. We are currently going through a review
17 process with the BRE with their only defence for this
18 opinion being the amended text which is in the proposed
19 BS 8414-2 draft that is currently out for public
20 comment. This review has resulted in the delay of the
21 production of the test report and the BR 135
22 classification."

23 Do you see that there?

24 A. Yes.

25 Q. Would you accept that in that paragraph you are

141

1 misleading the NHBC about the accurate position in
2 relation to that March 2014 test?

3 A. I think I'm being -- I am explaining what happened, I'm
4 explaining that there is some discussion over the
5 pass/fail. Yeah, I can see that it's perhaps optimistic
6 towards the end --

7 Q. In the fourth line, for example, you say there's some
8 ambiguity in the test standard. There wasn't any
9 ambiguity in BR 135 third edition that you had to go for
10 the full test duration, was there? It wasn't
11 a 30-minute test, it was a 60-minute test?

12 A. I remember being -- going through this with Tony, he had
13 a strong point with regard to the text and the
14 interpretation of this. But, yeah, I can see where
15 you're coming from here, definitely.

16 Q. Nowhere in there do you explain to them that what you
17 were testing was not what you were selling, because you
18 were trying desperately to find a different version of
19 K15 that might pass the test?

20 A. That's correct, yes.

21 Q. And the test was not going through a review process, was
22 it? The BRE had deemed the test a failure and Kingspan
23 were trying to challenge it. There was no review on the
24 BRE's part, was there?

25 A. I think we felt that their -- the email from the

142

1 customer services, we felt that that was going to be
2 ratified there, I think, at that time.

3 Q. Okay. Did you feel uncomfortable about giving the NHBC
4 the impression that this test might be deemed to meet
5 BR 135, thereby encouraging them to keep approving the
6 K15 you were selling on tall buildings?

7 A. I felt uncomfortable with all of this.

8 Q. And you also included in the email a photo of the
9 construction of the July test rig, and asked for
10 an extension of their ultimatum to 30 June 2014; that's
11 right, isn't it?

12 A. Yes.

13 Q. So you're saying "Look, we've got another test coming
14 up, please don't go through with your threat of pulling
15 K15 from your buildings, give us until 30 June"?

16 A. Yeah.

17 Q. You're just trying to buy more time with them?

18 A. Definitely, yes.

19 Q. Then in the final paragraph of that page, we see this.
20 You say:

21 "Kingspan identify that a single test will not be
22 the silver bullet to alleviate any concerns therefore
23 are working with Arup to create a generic assessment of
24 our testing to date to give us a better scope of
25 approval. Alongside any BS 8414 data we are also

143

1 looking to obtain a tool kit that can be used on a
2 project specific basis using knowledge that has been
3 collated to date and allowed Arup, Wintech and the other
4 large façade consultants to accept the use of Kooltherm
5 K15 above 18metres. Kingspan have a large portfolio of
6 Phenolic fire test data that has been used by Arup to
7 accept the use of our products which we can make
8 available to the NHBC if required however we understand
9 your need to firstly see BS 8414-2 test information as
10 referenced in our Building Regulation. A summary of
11 this has been added for your perusal."

12 Do you see that there?

13 A. Yes.

14 Q. Now, it's right, isn't it, that some time after this,
15 not before, Arup eventually did agree to meet with
16 Kingspan without making any promises or endorsement or
17 collaboration with Kingspan; that's right, isn't it?

18 A. We had a meeting with Arup with regard to K15 at a later
19 date, yes.

20 Q. And they wouldn't support your product, would they?

21 A. They needed -- they also needed more information.

22 Q. Yes. And they wouldn't provide Kingspan with any form
23 of generic assessment for K15, would they?

24 A. They didn't at that time, no. They wanted to deal on
25 a project by project basis, and they needed more

144

1 evidence from us.
 2 Q. Yes. Now, Kingspan, they send a letter to the NHBC on
 3 3 August 2014, if we can go to that, {KIN00002186/2}, at
 4 the bottom. We can see this is a letter signed by you.
 5 We go back to the first page {KIN00002186/1}, so this is
 6 dated 3 August for the attention of Steve Evans at the
 7 NHBC. Do you see that there?
 8 A. Yes.
 9 Q. Sorry, back to page 2 {KIN00002186/2}, you have copied
 10 the letter to the sales director, Richard Bromwich,
 11 Richard Burnley, the managing director, and
 12 Tony Millichap, the technical manager within Kingspan.
 13 Do you see that?
 14 A. Yes.
 15 Q. Who drafted this letter? Did you draft it or was it
 16 a joint effort?
 17 A. Can I have a look through it from the start.
 18 Q. Of course, I'm sorry (page 1 {KIN00002186/1}). Let's
 19 look through it first. In the first paragraph you
 20 correct the NHBC about whether or not -- what type of
 21 foam Kooltherm K15 is, and you take the opportunity to
 22 correct them and say it's a phenolic foam, not a PIR
 23 foam.
 24 Then in paragraph 2, you say this:
 25 "Our significant test portfolio alongside many

145

1 precedents in gaining approval standards lobbying and
 2 extended involvement with fire consultants over many
 3 years has afforded Kingspan with a deep understanding of
 4 the regulatory framework in this area. Given Kingspan's
 5 confidence the product is fit for purpose and working
 6 within this framework our only practical option to
 7 demonstrate compliance is via a Fire Safety Engineering
 8 Approach, the prohibitive cost and recognised lack of
 9 scope of approval within BS 8414 and BR 135 demands
 10 this."
 11 Do you see that there?
 12 A. Yes.
 13 Q. It's right --
 14 A. This letter, sorry, was -- I recognise this text as this
 15 came from Tony, or he assisted me in putting this letter
 16 together.
 17 Q. Yes, and it's right, isn't it, that it's not until
 18 4 August 2014, ie after this letter, that you write to
 19 Arup seeking their assistance?
 20 A. If that's the case --
 21 Q. We can briefly look at that. If we go to
 22 {KIN00002181/6}, there's an email on 7 August 2014.
 23 5.42.
 24 A. Yeah, I was having no success with Andrew Hedges,
 25 I think.

146

1 Q. I think if we go up the page {KIN00002181/5}, there, so
 2 7 August, "Charlotte/Adam", and then we go down, they're
 3 at Arup:
 4 "We trust all is well ..."
 5 You had some involvement with a project First Street
 6 and Carillion, and then you say:
 7 "We would like to plan a meeting we have two
 8 successful BS 8414 tests one with a combustible cladding
 9 and one with a terracotta. I would like to send these
 10 to you and start discussions about our needs below.
 11 Basically we know that our testing is not a silver
 12 bullet but would like some scope of assessment and the
 13 identification of when a fire consultant needs to become
 14 involved."
 15 So that's where you're asking Arup to see if they
 16 can give you some kind of scope of application?
 17 A. Yes.
 18 Q. So if we go back to the letter that you had written to
 19 the NHBC on 3 August 2014 {KIN00002186/1}, we see there
 20 in the second paragraph you're referring to your
 21 "significant test portfolio". What was that significant
 22 test portfolio? It was no different to what we've
 23 talked about before, was it? You didn't have any
 24 8414 test that you had passed in 2014; you only still
 25 had the 2005 test. Isn't that right?

147

1 A. I think we're generally referring to all our
 2 fire testing on all our Kooltherm products. So yeah,
 3 it's not directly clear.
 4 Q. No, and for large scale fire testing on K15, you didn't
 5 have any further 8414 test data or BR 135
 6 classifications, did you?
 7 A. That's correct, yes.
 8 Q. Then in the next paragraph you say:
 9 "For absolute clarity Kingspan Insulation are
 10 confident Kooltherm ... can be appropriate for use in
 11 the application."
 12 Then in the second half of that paragraph you say:
 13 "In the event NHBC were to offer contrary advice to
 14 the wide industry we would request 14 days prior notice
 15 in order that we may consider our position further.
 16 This is particularly pertinent given the number of
 17 bodies you have undertaken to keep informed."
 18 Then if we go to the top of page 2 {KIN00002186/2},
 19 you say:
 20 "As part of the test portfolio we have completed two
 21 further successful tests to BS8414 Part 2 this year and
 22 currently await their interpretation to BR 135. These
 23 tests have been commissioned to demonstrate a range of
 24 approval and include scope for insulation thickness and
 25 cladding finish type. We have also reached some

148

1 agreement with regards to extending the scope of this
 2 testing in line with comments from your Dave White with
 3 regards to the possibility to put flexible insulation
 4 fill between the steel frame studwork.”
 5 Do you see that there?
 6 A. We had received an agreement from I think it was
 7 somebody at the BRE that said the inclusion of
 8 a flexible insulant between the steelwork would not
 9 adversely affect the result, so they were comfortable in
 10 providing that assessment.
 11 Q. In terms of the two further successful tests you're
 12 referring to at the top of that page, in that paragraph,
 13 which test? There has been the one to 8414-2 carried
 14 out on 7 July 2014 on a research and development
 15 product. What's the other successful test?
 16 A. Could I have a look at my presentation again, just to
 17 remind myself of that?
 18 Q. Yes.
 19 A. I'm struggling with this --
 20 Q. Just to be clear, the only tests in 2014 were
 21 January 2014, that was the fail; March 2014, that was
 22 the one that was challenged; and then July 2014.
 23 A. And the January and March ones were Trespa, were they?
 24 Q. Yes. One was a Trespa, yes, one was a Trespa --
 25 A. FR.

149

1 Q. -- high-pressure laminate, and the other one was
 2 a decorative Trespa, the second one.
 3 A. And when was the terracotta test?
 4 Q. 7 January 2014. Sorry, July 2014.
 5 A. And this letter was written ...?
 6 Q. In August 2014.
 7 A. So I'm talking about the terracotta test there, aren't
 8 I? And I'm talking about -- we're talking about --
 9 potentially I think we might be talking about the one
 10 that might be a fail --
 11 Q. The March one?
 12 A. -- or the one that was deemed potentially a fail.
 13 Q. But the BRE had not by August 2014 changed their
 14 previous position on that March test, had they?
 15 A. No. Like I say, I think Tony was, because we had that
 16 ongoing C1S25, whatever it was, complaint code, that
 17 that was going to be reviewed at a later date, I think,
 18 anyway. This is just optimistic text, isn't it?
 19 Q. Well, it's inaccurate. It's not optimistic, is it?
 20 Because there hadn't been a second successful test, had
 21 there? Because March 2014 --
 22 A. Yeah, if the first one's not successful, then yeah, it
 23 doesn't work.
 24 Q. I think you agreed with me earlier that the January one
 25 was certainly not. I think it failed both on

150

1 thermocouple and reaching the top of the rig. Are you
 2 prepared to accept that this is inaccurate and
 3 misleading, this paragraph?
 4 A. Yes, definitely.
 5 Q. Then in the last line of that paragraph, you say:
 6 "We have also reached some agreement with regards to
 7 extending the scope of this testing in line with
 8 comments from your Dave White ..."
 9 Can you help us as to what that's referring to?
 10 A. This is to do with the inclusion of flexible insulation.
 11 We were proposing -- he'd seen -- I had been sending the
 12 design details for the future tests to Dave White, he
 13 had been concerned that we weren't including mineral
 14 fibre or flexible fibre insulation between the steel
 15 studwork. Although we weren't actually testing with
 16 fibre between the steel studwork, when I spoke to the
 17 BRE they were comfortable that they would be able to do
 18 an assessment to take a part 2 test without flexible
 19 fibre between the studs and say that, yes, flexible
 20 fibre could be included between the studs. This was one
 21 of Dave's requirements. He was very passionate about
 22 fire resistance, so he wanted to see that flexible
 23 insulation in that area.
 24 Q. I see, so that was a very specific area that you were
 25 discussing?

151

1 A. Yeah, that was, yeah.
 2 Q. It was not extending the scope of 8414 testing?
 3 A. It is extending the scope of 8414 but it's saying that
 4 it's not just applicable for steel frames, it's
 5 applicable for steel frames with insulation between them
 6 as well.
 7 Q. But you hadn't even got to the steel frames bit, had
 8 you?
 9 A. The terracotta test wasn't on a steel frame, the one
 10 done in July.
 11 Q. Sorry, that one was, but it was a research and
 12 development product, it was a solstice blown product.
 13 A. Which was going to be -- you see, in my mind, I come
 14 back to what I said before about once Kingspan found
 15 a product that worked it was no longer research and
 16 development, that was going to be the way forward. And
 17 we would only move backwards if we could then take that
 18 test and repeat it again with the standard product and
 19 then we could say okay, well, we passed it with a better
 20 product but we've also passed it with a standard product
 21 so we can move back to that. So that's just how my mind
 22 worked at the time really and that was the ethos of
 23 Kingspan when it came to research and development.
 24 Q. That was purely wishful thinking. Meanwhile it's being
 25 specified on lots of buildings, isn't it?

152

1 A. Yes, that's correct.
 2 Q. Now, you attend another meeting at the NHBC on
 3 6 August 2014, and following that meeting the NHBC
 4 requested a letter of comfort from the BRE about ongoing
 5 testing and assessments. Do you remember that?
 6 A. Yes.
 7 Q. Did the BRE ever write such a letter of comfort about
 8 testing?
 9 A. I don't think they did, no.
 10 Q. No. Would you agree that rather than the BRE providing
 11 letters of comfort, these were being provided by
 12 Kingspan?
 13 A. Yes. We were providing -- well, we were providing
 14 letters that said that "We were happy with it, but you
 15 still needed to source independent verification".
 16 Q. Yes.
 17 A. Because at the end of the day we only had this body of
 18 evidence.
 19 Q. Yes. Let's look at an email chain, {KIN00008841}, from
 20 21 August 2014. So this is an email from you -- if we
 21 blow up the first half of the page -- from you to
 22 Tony Millichap, Richard Bromwich, Richard Burnley,
 23 Gwyn Davies, Malcolm Rochefort, Linzi Hobbs, and you
 24 say:
 25 "Subject: Comment required by Monday 5pm pls:- K15

153

1 update."
 2 You begin that email saying:
 3 "As the key stakeholders for the current
 4 Kooltherm K15 Fire Certification Issues I have taken
 5 five to update you all on the current situation since
 6 our last meeting a month ago."
 7 Do you see that there?
 8 A. Yes.
 9 Q. So is it right that those were the key stakeholders,
 10 those people who received this email, they were the key
 11 stakeholders for the K15 fire certification issues?
 12 A. Yeah, I'd say at the time, yeah. Perhaps I might have
 13 missed Vincent Coppock, but he reported in to Malcolm,
 14 so Malcolm's on there, so yes, that's fine.
 15 Q. Under "NHBC/BCA" you say this:
 16 "A meeting has been held with the NHBC whom are
 17 still pushing for someone to provide job specific test
 18 data. They are still sanctioning the use of K15 as long
 19 as they get a bespoke letter off [Kingspan] which
 20 Technical Projects are turning around in 48 hours on
 21 receipt of the drawings and confirmation of the fire
 22 barrier dimensions. They have also given us an extra
 23 3 months to get some further assessments on the test
 24 data to meet their needs*. We have also requested
 25 2 weeks notification if they decide to change their

154

1 stance. Steve Evans was also involved in the BCA
 2 publication attached ..."
 3 And you attached BCA Technical Guidance Note 18 from
 4 June 2014 to that email. And you say he was involved in
 5 that publication attached:
 6 "... which has been driven by them following the
 7 confusion in interpretation of our high rise
 8 regulations. I have highlighted some parts of this
 9 document as it clearly singles out polyurethane as not
 10 being suitable but does not mention PF [phenolic foam].
 11 We should consider whether this would be a document we
 12 would ever consider referencing for commercial reasons?"
 13 Do you see that there?
 14 A. Yes.
 15 Q. So going back to the second line of that, what's
 16 happening is NHBC and BCA -- the Building Control
 17 Alliance there. But I think you're saying there it's
 18 the NHBC are still sanctioning the use of K15 as long as
 19 they get a bespoke letter; is that right?
 20 A. That's correct, yes.
 21 Q. Again, Kingspan shouldn't have been sanctioning the use
 22 of K15, should it, given the testing it had done to date
 23 at that time?
 24 A. We were providing a letter of comfort, the NHBC were
 25 sanctioning the use of the product, but yes, there is

155

1 the issue with regards to the test data not representing
 2 the original formulations, yeah.
 3 Q. Yes. Did anyone in the senior management at Kingspan,
 4 several of whom you have copied in to this email, raise
 5 any concerns or make any comments about this practice at
 6 this time, do you remember?
 7 A. Not that I recall.
 8 Q. Was the risk to life safety or Kingspan's corporate
 9 responsibility ever something that was discussed, either
 10 at this time or thereafter, in relation to this approval
 11 of K15 on high-rise buildings?
 12 A. The letters of comfort that we wrote, I think we might
 13 have had a lawyer look at them or something, they
 14 were ... we were only -- Kingspan was only simply
 15 presenting the information it had and they were always
 16 pushing out for others to take responsibility. So
 17 although it was a letter of comfort, it wasn't really
 18 a big comfort to the NHBC, those letters.
 19 Q. But you were still positively suggesting K15 in
 20 configurations very different from the one you had
 21 tested in 2005?
 22 A. Yes, that's correct.
 23 Q. And despite knowing that the product had changed since
 24 that time?
 25 A. Yes, that's correct.

156

1 Q. Now, that test from July 2014 -- just to ask you some
2 questions about that now -- that was on 7 July 2014,
3 that was the third test that year, it was a test at
4 8414-2 using a terracotta tile at the BRE.

5 In your witness statement, if we go to that, at the
6 top of page 58, paragraph 120(a), {KIN00022312/58}
7 you're asked about what was the product and the
8 properties of the product actually tested, and you say:

9 "Foil faced thermoset phenolic foam - This was an
10 improved variant of K15 it would appear the same but
11 production records would relate it to a trial product
12 that potentially going to be the new version of
13 Kooltherm K15."

14 Do you see that there?

15 A. Yes.

16 Q. Was there anyone in the technical team at Kingspan who
17 was unaware that that test had been carried out on
18 a trial product?

19 (Pause)

20 A. I don't know, to be honest. Maybe the frontline
21 technical advisers, but we weren't -- they weren't
22 dealing with the K15 enquiries.

23 Q. But all those who were on that email chain before, would
24 they have been aware that the July test was on a trial
25 product?

157

1 A. Of course, because they would have provided the product
2 to me, so yes.

3 Q. Yes. Let's go back to your PowerPoint presentation,
4 {KIN00021945/17}, and we can see at the very bottom of
5 that page, July 2014, Kingspan, and it's 80-millimetre
6 Kingspan this time, and it says:

7 "50micron unperforated Sol/Top Hats."

8 So the 50 microns, we know that that's about the
9 foil facer, so it's double the thickness of the
10 foil facer normally used for K15; yes?

11 A. That's correct.

12 Q. And it's unperforated, whereas --

13 A. Sorry, it's double the thickness of the foil within the
14 central part of the facer.

15 Q. Yes.

16 A. So it's not the entire facer --

17 Q. No, I see.

18 A. -- it's a laminate facer.

19 Q. I see, yes. And it's sol again. Does that mean
20 solstice blown?

21 A. That would mean solstice blown, yes.

22 Q. What does "top hats" mean, can you help us?

23 A. "Top hats" is in relation to the aluminium support
24 system, which would be what was required for terracotta.

25 Q. I see. And then we can see on the right that was

158

1 a terracotta --

2 A. Cladding system, yes.

3 Q. -- test. Yes.

4 If we can go to the schedule that's been provided by
5 Kingspan to us, at {KIN00022357/3} at the bottom, there
6 we can see it says, 7 July 2014, Kingspan Insulation in
7 the next test; and then the next system tested, this is
8 Taylor Maxwell Standard Classico terracotta tile is
9 a pass; there is a test report number; and then in the
10 next column, "Properties of the tested insulation
11 product" it says:

12 "Trial product.

13 "Thickness: 80mm."

14 And then:

15 "Foil: Perforated and unperforated 50micron."

16 I just wanted to ask you about that. Does that mean
17 that it's possible that the foil used in that test had
18 a perforated foil on one side and an unperforated foil
19 on the other side?

20 A. That's what it would mean, yes.

21 Q. Yes. Do you recall that, about that test? Can you
22 remember that?

23 A. I recall it was very difficult to manufacture product
24 without perforations. I think we really struggled when
25 it was unperforated, I think there was issues with the

159

1 boards buckling. But it was something that they were
2 potentially working towards, so it was a suitable enough
3 product to be used in the test anyway.

4 Q. Yes.

5 In Adrian Pargeter's third statement to the Inquiry,
6 he's described this test as testing a low lambda version
7 of K15. Is that right?

8 A. The solstice blowing agent was what the business were
9 moving towards to reduce the lambda from, I think 022 to
10 018, so it was definitely something that was going to
11 happen.

12 Q. Yes.

13 If we can go to an email you send on
14 27 October 2014, {KIN00021904/2}, and we go to the
15 bottom of page 2, so there's an email there right at the
16 bottom, 10.31 -- it begins on that page -- to
17 Gwyn Davies, Linzi Hobbs, copying in Adrian Pargeter,
18 Tony Millichap.

19 If we go over the page, {KIN00021904/3}, what you
20 appear to be discussing in this email is the insulation
21 that you're going to send to the BRE for the next test
22 after July 2014, and at the second to last paragraph on
23 that page you say:

24 "Can you provide the location of the product so
25 I can get it labelled up for transit. I also need to

160

1 make sure it does not state ' trial ' on the label ."
 2 Do you see that there?
 3 A. Yes.
 4 Q. Why did you not want the product to state " trial " on the
 5 label?
 6 A. Again, we were wanting to keep things simple with the
 7 BRE. We would be providing them with batch numbers. It
 8 would -- traditionally if things were in the warehouse
 9 it would probably say "OP920 trial" or " solstice trial ",
 10 or something like that. To keep our commercial secrets,
 11 we needed to make sure that that was a correctly
 12 labelled product.
 13 Q. But did you not want BRE to know that it was a trial
 14 batch? Why was there a problem with them knowing that?
 15 A. Because it wasn't going -- if this was the way -- if
 16 this was successful, this was going to be the product
 17 we'd move forward with.
 18 Q. And you didn't want them to know that what you were
 19 doing was testing a trial product?
 20 A. Potentially not, no.
 21 Q. No.
 22 Can we just look at a photograph relating to the
 23 January 2014 Trespa high-pressure laminate test. If we
 24 can go to {BRE00005773/25} of that clip, and I want to
 25 zoom in on the bottom right-hand photograph on that

161

1 page. Do you see that down there?
 2 These are photographs provided to the Inquiry in the
 3 BRE's disclosure, and appear to relate to the test,
 4 based on the number that was used for these photographs,
 5 to the test on 7 January 2014. You can see it says
 6 "K15 Trial" there. Do you see that?
 7 A. Yeah.
 8 Q. So is it possible that for this test someone didn't
 9 think to remove the " trial " on that?
 10 A. The product would have that information on the label.
 11 You've got the batch number there, the production date,
 12 that would all be printed on the side of the boards.
 13 They have further labels on there to identify the
 14 stacks, which -- often when they're in the trials area
 15 in the factory they had, you know, it was more simpler
 16 labels which would describe the chemical constituent of
 17 the product. So ...
 18 Q. Yes.
 19 Can we now go to an email from November 2014,
 20 {KIN00021810}, so this is towards the end of 2014, and
 21 the subject heading -- sorry, if we bring that up.
 22 This is an email chain with the subject "K15 testing
 23 direction". At the top of the page, we can see you
 24 forwarded this to Adrian Pargeter. Then we can see what
 25 you forwarded below that, which is an email from

162

1 Tony Millichap to Richard Burnley, copying you. Do you
 2 see that there?
 3 A. Yes.
 4 Q. Then if we go to the email that Tony Millichap's sent on
 5 that page, he says:
 6 "Further to our meeting earlier today I have set out
 7 our understanding of the published Celotex RSS000 result
 8 and its current impact."
 9 Then he says this:
 10 " Initially having sourced a copy of Celotex
 11 marketing blurb we were not surprised of the vagueness
 12 surrounding the specifics of the test construction,
 13 notably around provision of fire breaks. Further
 14 efforts finally secured a copy of the actual test report
 15 (albeit this was missing the relevant pages relating to
 16 the test construction) upon receipt of the actual
 17 construction designs these were reduced photo copies
 18 again lacking clarity, the reports text references four
 19 horizontal fire breaks however the sketch is unclear
 20 where/how these are positioned."
 21 Then he says:
 22 "I do suspect from their construction designs that
 23 a critical panel joint that is essential to the test and
 24 influences the result is missing from the Celotex
 25 design, I am not confident we have enough clarity to

163

1 challenge this officially with BRE but we will raise it
 2 in any case."
 3 Do you see that there?
 4 A. Yes.
 5 Q. So this appears to be referring to the -- well, it is,
 6 we can see from the first paragraph -- Celotex RS5000
 7 testing and the product had been launched in August 2014
 8 of that year.
 9 Can you help us, do you know how Kingspan managed to
 10 obtain a copy of the test report?
 11 A. We would seek the help of a friendly architect or
 12 a friendly installation distributor, and try and get
 13 them to request a copy of the report. And that's how we
 14 got a copy. I think it came from a sales manager, who
 15 got it from a distributor.
 16 Q. Yes. If we carry on to look at the fourth paragraph, if
 17 we can go down that page, he says there in the paragraph
 18 "We are only ...", third paragraph down now on that
 19 page, he says:
 20 "We are only aware of one project where the Celotex
 21 product has been adopted which involved the same supply
 22 chain as their test programme, we have yet to be asked
 23 to defend specification against the product, we are
 24 actively involved in supporting 60+ projects
 25 specifically on the over 18m issue."

164

1 Do you see that there?
 2 A. Yes.
 3 Q. So at that point it looks like Kingspan are trying to
 4 support the use of K15 on 60-plus projects for over
 5 18 metres; do you agree?
 6 A. Yes, that's correct.
 7 Q. Then he says this, moving on in the same paragraph:
 8 "Whilst we had to financially support the project at
 9 First Street, Manchester this specification held and we
 10 have not lost a specification since. Feedback from
 11 specialist sub-contractors, specifiers and consultants
 12 all raise doubt over the 'Celotex solution'."
 13 Now, First Street was a project where Kingspan paid
 14 Arup for an assessment and the K15 was actually removed,
 15 wasn't it, off that building?
 16 A. I'm not directly familiar with that project, but --
 17 Q. Okay. What was the doubt over the Celotex solution?
 18 Did you ever discuss that with anybody?
 19 A. Well, I think we knew, because we were aware of the
 20 flammability of K15 compared to the Celotex product,
 21 because I'd tested them in the laboratories, in our lab
 22 scale tests, we were just shocked how they could even
 23 get a test -- when Kingspan sort of struggled to pass
 24 this test and we were seeing that we were only going to
 25 be suitable in certain scenarios, if any at all, then:

165

1 how could Celotex have even got there? This was a big
 2 question. So I was presented the report by a number of
 3 people who were like, "Well, this doesn't make any
 4 sense. How can a PIR be used in that situation?"
 5 Q. Wasn't the real position that you knew that neither
 6 Celotex RS5000 nor Kingspan K15 should be being used on
 7 buildings over 18 metres? You knew that, didn't you?
 8 A. I knew we had serious holes in our information, yes.
 9 Q. Yes. Then the email continues, he says:
 10 "In light of the fact we cannot produce K15 100%
 11 Solstice either commercially or from a production
 12 perspective I would advocate we test the blended product
 13 (once lambda and costs are acceptable, I have included
 14 Malcolms costs assessment). To revert to testing
 15 standard NT ..."
 16 Is that new technology?
 17 A. That must be new technology, yes.
 18 Q. "... K15 will not support the strategy we are pursuing
 19 with ARUPs and NHBC but will signal a backwards step
 20 with significant consequence."
 21 Do you see that there?
 22 A. Yes.
 23 Q. So it's clear that you can't produce the solstice
 24 product that you have passed with in July; you can't
 25 produce it either commercially or from a production

166

1 perspective. That's right, isn't it?
 2 A. That's correct, yes.
 3 Q. What's the blended product he's referring to there?
 4 A. I think he's talking about standard new technology.
 5 Q. Is it right that the solstice product couldn't be
 6 produced because it had crystallised in the production
 7 process, so it just wasn't viable? Were you aware of
 8 that?
 9 A. I think there was a number of reasons it was
 10 problematic. Like I say, I didn't follow the chemistry
 11 closely.
 12 Q. When he refers there at the end of that paragraph to, he
 13 talks about "reverting to testing the standard new
 14 technology K15 will not support the strategy we are
 15 pursuing with Arups and [the] NHBC", what was your
 16 understanding of what that strategy was at that time?
 17 A. That we were looking for assessments, we were looking
 18 for expansion, we were looking for -- to work with
 19 a favourable consultant who would be able to take our
 20 information and expand it, so get a scope of application
 21 on those test result -- on the original test result.
 22 Q. And you were still desperate for that, weren't you, at
 23 this time?
 24 A. Of course, yeah. But we were -- this -- we were shocked
 25 by this, because this -- and this is typical of what was

167

1 happening at Kingspan, we were going down a route with
 2 a new chemical and then it was proving, when we started
 3 to -- we'd do small scale testing, it would prove it's
 4 okay, when we started to roll it out to the product
 5 range it would either become not available, China
 6 couldn't supply it or it was, you know, it was not
 7 commercially viable for any number of reasons.
 8 So, because we were mixing the formulation
 9 ourselves, we were constantly coming up against these
 10 sort of problems.
 11 Q. Yes.
 12 A. So we could talk about two years' worth of work could be
 13 just down the pan because they could no longer afford to
 14 buy that chemical.
 15 Q. Yes.
 16 A. So it was very frustrating.
 17 Q. Yes.
 18 A. I mean, I personally wanted a comfortable pass margin on
 19 any of our tests so we were confident in what we were
 20 supplying. It was just not a good situation that we
 21 were only barely passing, if not at all.
 22 Q. Yes.
 23 Then in the next paragraph he goes on:
 24 "The above approach assumes we continue to
 25 acknowledge differences between the tested products

168

1 (both blowing agent and facing thickness have
2 significant impact). All testing has been referenced
3 back to precise batches with control samples as is
4 a requirement of BRE however this does not include
5 a description of the physical differences."

6 Do you see that there?

7 A. Yes. It's going back to what I was saying before about:
8 I'd made sure that the BRE had all the batches, so if
9 they ever came in with the LPCB it could all be traced
10 back and we could have a certified, validated approach.

11 Q. Yes.

12 I want to ask you: by this time, had Kingspan
13 discussed with anyone else at the BRE the differences
14 between the sold product and the tested product?
15 I think you said yesterday that Phil Clark was aware
16 that you were trying out different products. Is that
17 right?

18 A. I was talking to Phil about, that we were making
19 improvements to the material, that's why I was asking
20 for his candid answers, his on and off-record comments
21 with regards to what he thought of the product.

22 Q. Was he aware that what you'd tested in 2005 was not what
23 you were selling after that?

24 A. I think he was -- I notice he was -- I think he might
25 have spotted the facing was different. And I might have

169

1 confirmed that to him as well, but ...

2 Q. Was there anyone -- sorry.

3 A. Essentially, to the untrained eye, you know, it's a pink
4 foam with a foil facing, it's not going to be -- nobody
5 else is going to notice it's any different; it's only
6 within the Kingspan formulation where the differences
7 are apparent.

8 Q. Did you discuss that with anyone else at the BRE at any
9 time, those differences?

10 A. The BRE would certify our ISO 9000, so they were coming
11 into the company four times a year to look at our
12 formulations. However, I don't think we discussed it
13 directly with regards to the K15, no.

14 Q. Okay.

15 Now, the situation with the NHBC --

16 SIR MARTIN MOORE-BICK: I'm sorry, before you go on,
17 Ms Grange, can I just try and get a bit of help?

18 MS GRANGE: Yes.

19 SIR MARTIN MOORE-BICK: This reference to the blended
20 product, I'm not sure how far it matters, but I wonder
21 if you can help a little bit further.

22 The thrust of the paragraph beginning "In light of
23 the fact ..." is that you couldn't produce 100%
24 solstice, but you didn't want to revert to testing
25 standard new technology K15.

170

1 So I'm just wondering whether the blended product
2 involved some sort of halfway house between the two, or
3 maybe something different.

4 A. No, no, I think that's just -- I think he's referring to
5 just standard new technology.

6 SIR MARTIN MOORE-BICK: Well, that doesn't make much sense,
7 does it? Because you go on in the next sentence to say:
8 "To revert to testing standard [new technology] ...
9 will not support the strategy ... but will signal
10 a backwards step with significant consequence."

11 So the argument seems to be: "We should try testing
12 something that isn't standard new technology K15 and
13 isn't 100% solstice". Could you shed any light on that?

14 A. Yeah. No, I see what you're saying, I agree with this.
15 It's talking about a mixture, isn't it, between --

16 SIR MARTIN MOORE-BICK: Well, that's what I --

17 MS GRANGE: To be fair, Mr Chairman, this isn't his email,
18 just to be clear. It's Tony Millichap's email.

19 SIR MARTIN MOORE-BICK: Well, all right, Mr Millichap. But
20 the point is: can Mr Meredith shed any light on that?

21 A. I think you're correct, Tony's angling towards a blend,
22 but again Tony -- he wasn't a chemist either, he wasn't
23 responsible for the chemistry side of the business, we
24 were picking up terminology from the technical meetings.

25 SIR MARTIN MOORE-BICK: If necessary we can ask him or

171

1 possibly someone else.

2 A. Yeah.

3 SIR MARTIN MOORE-BICK: Are you going on to another
4 document?

5 MS GRANGE: I am, yes.

6 SIR MARTIN MOORE-BICK: Would that be a good point to have
7 a break, or is it going to interrupt the flow?

8 MS GRANGE: I would like to finish this topic on the NHBC
9 before the break, if that's okay.

10 SIR MARTIN MOORE-BICK: Yes, all right. Carry on then.

11 MS GRANGE: So the situation with the NHBC escalated during
12 the second half of 2014; that's right, isn't it?

13 A. Yes.

14 Q. If I can summarise the situation, after requests for
15 letters of comfort from the BRE and Arup were made,
16 neither of these letters were written; the NHBC
17 attempted to place further ultimatums on Kingspan to
18 provide test data; the meeting with Arup didn't result
19 in Arup agreeing to assist or provide any guidance to
20 Kingspan. That was the position, wasn't it?

21 A. Yes.

22 Q. Do you remember there was another meeting with the NHBC
23 on 22 October?

24 A. This was the one where Richard Burnley attended, yeah?

25 Q. I think that's right. Can you remember what was said at

172

1 that meeting?

2 A. To be honest, they all blend into one, those meetings.

3 Q. Okay.

4 What happens then is the situation with the NHBC

5 culminates in a letter from Ian Davis, the operations

6 director, to Tony Millichap, copying in Gene Murtagh,

7 the chief executive officer of Kingspan. If we can just

8 go to that letter, this is {NHB0000922}, dated

9 5 February 2015. It's headed "The use of

10 Kooltherm K15 ... in façades above 18 metres."

11 In the second paragraph, Ian Davis writes:

12 "Kingspan market K15 rainscreen board with the claim

13 that '... it has been successfully tested to BS 8414;

14 2002, and can meet the criteria within BR 135, which

15 makes it acceptable for use above 18.0m ...' This

16 wording appears on the front page of the K15 product

17 literature dated March 2011 which is on your website."

18 He goes on:

19 "Being aware that the current BBA certificate for

20 the K15 product, dated December 2013, does not provide

21 the necessary evidence to fully support this claim, we

22 have been requesting evidence from Kingspan, since early

23 2014."

24 Then he continues:

25 "We are disappointed that despite commitments from

173

1 Kingspan to engage Fire Engineer expertise or carry out

2 substantial additional testing to demonstrate that

3 alternative typical wall build-ups are acceptable to

4 BR 135, to date none of this has come to fruition and no

5 evidence has been provided to us that demonstrates that

6 K15 can be used in façades over 18.0m in any other

7 configuration than that detailed in the current

8 BBA certificate."

9 Now, he's right, isn't he? He's entirely correct in

10 what he has written there: despite those commitments to

11 get fire engineering expertise or substantial additional

12 testing, none of that had come to fruition, had it?

13 A. Did we not have the terracotta test by that time? That

14 was July 2014.

15 Q. Yes.

16 A. Yeah. Okay, yeah. But he's right that we don't have

17 anything within BBA certificate.

18 Q. Then continuing, if we go on, he says:

19 "The absence of evidence from Kingspan means we will

20 soon be faced with having to decline to accept buildings

21 which are currently under construction and have

22 specified the K15 product in façades above 18.0m, for

23 risk management purposes as a provider of defects

24 liability insurance and in many cases also as the

25 approved inspector, unless the builders concerned can

174

1 provide evidence themselves in accordance with BCA

2 Guidance Note 18 ...".

3 Do you see that there? Then he says in the next

4 paragraph:

5 "The absence of evidence also means we now have to

6 advise builders registering new developments with us

7 that if they specify the K15 product for use in façades

8 above 18.0m, they will have to provide this evidence

9 themselves ..."

10 Do you see that there?

11 A. Yes.

12 Q. So this is the NHBC having been patient and waited for

13 evidence, they haven't had that evidence forthcoming and

14 therefore they are getting stronger here with Kingspan,

15 aren't they, in what they are saying --

16 A. Yeah, they are also coming round to our point of view,

17 to a certain extent, that we're wanting them to seek

18 acceptance for the full system from elsewhere as well.

19 It shouldn't -- we didn't feel it should sit directly on

20 our shoulders all the time.

21 Q. So was that your reaction to this letter, that there was

22 some form of silver lining within it?

23 A. Well, he's saying that he's - where does it say that

24 he's ...

25 "... unless the builders concerned can provide

175

1 evidence themselves in accordance with the BCA guidance

2 ..."

3 I assume, I haven't read the BCA document lately,

4 but that refers to a fire engineering approach or

5 something like that, doesn't it?

6 Q. I think in June 2014 it referred to desktop assessments,

7 and then in June 2015 it started referring to

8 fire engineering approaches.

9 A. Right, okay.

10 Q. What was the response of your superiors to this letter,

11 can you remember?

12 A. "Let's do some more testing", I think, "Keep trying".

13 Q. Let's look now at the response to this letter, it's at

14 {KIN00008283}. It's dated 13 February 2015, and it's

15 the response -- it's a response from Kingspan's

16 solicitors, Fenwick Elliott. Do you remember that?

17 A. I was aware that this had gone on, yes.

18 Q. Yes. This is a threat to injunct the NHBC in order to

19 prevent them from going ahead with their plan to advise

20 builders that the use of K15 on buildings with a floor

21 over 18 metres required proof of compliance in

22 accordance with the BCA guidance, doesn't it? Do you

23 remember that at the time?

24 If we go to page 4 {KIN00008283/4} of the letter,

25 second paragraph down, we see that very clearly.

176

1 (Pause)
2 So you see in the second main paragraph down there
3 they want:
4 "If we have not received such confirmation from you
5 by 4 pm on Monday 16 February 2015, our client considers
6 it will be left with no alternative but to protect its
7 position by applying to the court for an injunction
8 preventing the NHBC from making the statements you
9 propose in relation to the K15 boards. Clearly, we
10 would much prefer not having to do so."
11 Now, were you involved at all at this point in ...?
12 A. When it came to dealing with the legal side of it, this
13 was sort of above me, but --
14 Q. I'm not asking you --
15 A. I might have sat in on a call or I might have met Toby
16 at one point with Tony, but this is not something
17 I would have got involved in directly.
18 Q. So I'm not asking you what the content of any
19 instructions were that were given to the solicitors;
20 those are privileged. But do you know who it was at
21 Kingspan who was giving instructions in respect of this
22 letter? Who was it who was involved at Kingspan?
23 A. I think we saw in the earlier email trails that this
24 would have been Tony in conjunction with endorsement
25 from his line manager.

177

1 Q. I see. Tony Millichap?
2 A. Yeah.
3 Q. Yes.
4 Did you see this letter before it was sent to the
5 NHBC, do you remember?
6 A. I may have had it sent to me. I had quite a large
7 inbox. I didn't really get through all my emails on
8 a daily basis.
9 Q. If we look in the final paragraph on page 3
10 {KIN00008283/3}, the second line up from the bottom, we
11 can see it said in that paragraph:
12 "Given what we have said above, it is clear that
13 there is no justification for taking the steps outline
14 in your letter of 5 February 2015. Taking such
15 steps ..."
16 That's the letter I just took you to, where they
17 said they were going to start telling their builders
18 that: you need separate authorisation if it was going to
19 be used on buildings.
20 "Taking such steps would cause our client very
21 significant financial loss. They are not properly
22 justifiable from the tests which have been carried out.
23 They would amount to actionable negligent misstatements
24 of the true Position. Further, given that any such
25 unjustifiable statements would clearly cause serious

178

1 harm to our client's business resulting in serious
2 financial loss, they would amount to defamation under
3 the Defamation Act 2013."
4 Do you see that there? It's clearly being said in
5 that letter that NHBC's proposed statement to builders,
6 which they said they -- because they simply had no test
7 evidence to support the use above 18 metres, that they
8 were proposing to say to builders that K15 had to be
9 separately justified, Kingspan is saying that's
10 unjustifiable.
11 Now, was that your own view at the time? That's
12 what I want to ask. Was it your view that the position
13 the NHBC had taken was unjustifiable?
14 A. This is a very heavy-handed approach, isn't it?
15 I wouldn't say that their position was unjustifiable.
16 There was that terracotta test. Putting aside that the
17 formulation might not have been what was -- the facings
18 weren't what was directly being produced and sold in the
19 marketplace at the time, Kingspan had a story about the
20 product's ability to perform. But, you know, this
21 is ... this is pushing back in some order, isn't it?
22 MS GRANGE: I think we'll leave it there.
23 Mr Chairman, that's a good moment for a break.
24 SIR MARTIN MOORE-BICK: Yes, very well. Thank you.
25 Well, we're going to have a short break now,

179

1 Mr Meredith, the same as before. We will come back at
2 3.45, please, and no discussing your evidence while
3 you're out of the room. Thank you very much.
4 (Pause)
5 Right, 3.45, please.
6 (3.30 pm)
7 (A short break)
8 (3.45 pm)
9 SIR MARTIN MOORE-BICK: Right, Mr Meredith, ready to carry
10 on?
11 THE WITNESS: Okay.
12 SIR MARTIN MOORE-BICK: Thank you.
13 Yes, Ms Grange.
14 MS GRANGE: Yes, thank you.
15 Just on national class 0 now, just a couple of very
16 brief questions on that. You mentioned yesterday, you
17 said -- this, for the transcript, was yesterday
18 {Day75/166:15-16} -- that you were not able to repeat
19 the class 0 results for the Kesteren technology K15.
20 Is that right, that after the technology was
21 changed, you kept trying to test to BS 476-6 and 7 but
22 you couldn't ever get those results again with the new
23 technology? Is that right?
24 A. The part 7, the surface spread of flame test, that was
25 not an issue. It was the fire propagation test.

180

1 Q. Yes.
 2 A. We were unable to repeat the results as a composite
 3 material.
 4 Q. Yes. So it's right, isn't it, that Kingspan started
 5 testing the foil facer alone? Is that right?
 6 A. That's correct. Justin Davies found a clause in the
 7 Building Regulations that seemingly allowed this.
 8 I personally didn't agree with this, and voiced my
 9 concerns.
 10 Q. Yes. Who did you voice your concerns to?
 11 A. I think everybody.
 12 Q. Yes. And were you concerned that it seemed wrong to
 13 have a product that was a composite product like K15,
 14 but only be testing the foil facer?
 15 A. We could test the core -- Kingspan would test the core,
 16 that would achieve the part 6 result, and they would
 17 test the facing, that would achieve the part 6 result,
 18 as I understood, but they couldn't test -- put them
 19 together, it wouldn't work. Because of the nature of
 20 the test, the facing would blow off, push against the
 21 gas burners and caused a failed test, if I can remember
 22 correctly. So it was just something that wasn't
 23 possible with a composite of that nature.
 24 Q. Yes. What did Tony Millichap and Malcolm Rochefort say
 25 in response to your concerns about class 0 and testing

181

1 the foil facer alone?
 2 A. Justin found this clause in the Approved Document B
 3 that, like I say, seemingly allowed it. But I was not
 4 comfortable with that. But again, my -- from my
 5 personal perspective, I wanted to see K15 improved,
 6 because I felt that product needed that to be acceptable
 7 for use.
 8 Q. Yes.
 9 Now I want to move on now to ask you about the
 10 disciplinary and appeal hearings that you had prior to
 11 being dismissed by Kingspan after 16 years of employment
 12 there, and I do appreciate this is a sensitive
 13 subject --
 14 A. Okay.
 15 Q. -- but I do have that ask you about this.
 16 Now, it's right, isn't it, that your employment was
 17 terminated on 19 August 2015, and before the termination
 18 and after an appeal hearing you made certain comments
 19 about events at Kingspan during your time there? That's
 20 right, isn't it?
 21 A. Yes, that's the case.
 22 Q. And you also revealed to those in senior management at
 23 Kingspan that you had been suffering from stress, poor
 24 mental health and drug addiction problems?
 25 A. Yes, that's correct.

182

1 Q. Is it fair to say that, particularly once Wintech and
 2 the NHBC became concerned about K15, you were under
 3 enormous pressure at Kingspan to try and justify the use
 4 of K15 over 18 metres?
 5 A. Definitely, without a doubt.
 6 Q. Can we go to {KIN00008686}. This is an email that was
 7 received by Kingspan in July 2010. I want to go to the
 8 second email in the chain, which is an email from your
 9 landlord to Kingspan about various matters.
 10 If we look in the third paragraph of this email --
 11 it's titled "To Whom it May Concern" -- it says:
 12 "I had a chat with my lodger ... 2 days after
 13 hearing of this & they strongly denied it. I believed
 14 it for a short time, but I still am not sure. The
 15 person who told me that it was common knowledge at
 16 Kingspan of the problem my lodger has made me think if
 17 lots of people in the working environment there do know
 18 about it that there is 'no smoke without fire'! It may
 19 be an 'overblown' version, but if there is ANY hint of
 20 drug use in my house they will be evicted right away."
 21 Do you see that there?
 22 A. Yes.
 23 Q. Sorry, I should have picked this up in the first
 24 paragraph. It says there:
 25 "A quick email, and at this stage ... I was told by

183

1 a friend of mine, who is an employee at Kingspan ...
 2 that another member of your Staff, who's a Lodger in my
 3 house ... has quite a serious drug habit!"
 4 Do you see that there?
 5 A. Yes, I do.
 6 Q. Was it known within Kingspan at this time that you had
 7 a drug habit, a serious drug habit?
 8 A. I can't comment on that. I'm not sure. Like I say, we
 9 were -- I was definitely a functioning addict, I was
 10 working hard, it was just ... I had a number of serious
 11 problems that weren't just that, that culminated in my
 12 last couple of years there.
 13 So ... we're a very busy company, so everyone was
 14 steaming ahead with their own agendas --
 15 Q. Yes.
 16 A. -- working towards the main requirements of the company.
 17 Q. Yes.
 18 Were you asked by Kingspan at this time whether you
 19 had any problems? Did they come to you and say,
 20 you know, "Ivor, are you okay? Do you need support?"
 21 Did that happen?
 22 A. I think both my bosses Tony and Phil would always do
 23 whatever they could to help me, you know, they were very
 24 good bosses. But, no, not directly, not to do with this
 25 issue, no.

184

1 Q. No. Did you ever deny to them that you had problems of
2 this nature?
3 A. I -- there were -- this was brushed off as a bit of
4 a joke, really, at the time.
5 Q. Brushed off by you or brushed off by them?
6 A. Brushed off by them, and me to a certain extent,
7 I wasn't going to -- this was ... I had a lunatic
8 landlord, as you can see. So, yeah, it's just one of
9 the ...
10 SIR MARTIN MOORE-BICK: Would I be right in thinking that
11 you didn't actually raise any of your personal problems
12 with them?
13 A. No, they weren't problems at the time.
14 SIR MARTIN MOORE-BICK: No.
15 MS GRANGE: If we go now to 2014, if we go to {KIN00008700},
16 this is a series of emails from July 2014 between you,
17 Tony Millichap and Susan Ewart, who worked I think in
18 the HR department at Kingspan. It appears that you had
19 not submitted your expenses and mileage claims at this
20 time. In Tony Millichap's email to you, in the top
21 email of the chain, he says:
22 "Ivor, we have discussed related matters many times
23 including as recently as this week.
24 "You must allocate this type of activity the correct
25 priority, continued failure to recognise the importance

185

1 of these procedures will require me to formally address
2 the situation via disciplinary procedures -- you will
3 not get [a] warning again.
4 "For clarity this relates to management of expenses
5 mileage declaration, time and attendance and any other
6 items relating to self-administration. On a practical
7 note putting a recurring appointment in your diary each
8 week to spend some time on these tasks regularly will
9 manage the issue."
10 So would you accept that at this time you were
11 struggling with self-administration issues?
12 A. I always put the requirements of the business in front
13 of my requirements, so things like expenses I saw as
14 secondary, and I was dealing with things like testing
15 firstly. Yeah, to my own detriment. You know, I should
16 have been sorting out -- because I lost loads of money
17 from not putting my expenses in but, you know, I was
18 trying to do a job. I was very passionate about doing
19 the job, you know, I thought I had a job for life there,
20 to be honest.
21 Q. Did you feel at the time that Tony Millichap was trying
22 to help you with, sort out these kind of --
23 A. Of course he was. Of course he was.
24 Q. Then if we look at {KIN00022559}, this is
25 24 October 2014 and the issues are ongoing, and he

186

1 writes to you again and he says at the top of that page:
2 "Ivor, we have spoken too many times about this,
3 I regret if this continues I will take disciplinary
4 action. If you have an issue you should come clean now
5 otherwise resolve immediately."
6 Do you see that there?
7 A. Mm.
8 Q. Did you talk to him at the time about the problems you
9 were experiencing?
10 A. Yeah, I was talking about my -- I was overloaded with
11 work.
12 Q. Yes, and what was his response when you raised those
13 issues with him?
14 A. He was sort of helping me build a structure around
15 myself at around that time, so I could disseminate some
16 of my workload.
17 SIR MARTIN MOORE-BICK: I'm sorry to interrupt again, but
18 when you say you spoke to him about the problems you
19 were experiencing, was that --
20 A. No, it was --
21 SIR MARTIN MOORE-BICK: -- at work, or personal problems,
22 or both?
23 A. I had some personal issues --
24 SIR MARTIN MOORE-BICK: Yes. I'm not asking you to describe
25 them, I just want to know whether you raised them

187

1 with --
2 A. I was talking to him about some per -- some of my
3 personal issues, but primarily it was to do with the
4 workload, the pressure I was under with K15, and the
5 needs of the business at that time. And Tony, he was
6 then helping me put a team of people around myself to
7 actually take the pressure off my shoulders, but
8 unfortunately it was kind of probably a little bit "too
9 little too late", you know, it takes a good -- you know,
10 it can take six months to train a person up, and when
11 you've got four them around you that you're trying to
12 train up at the same time, it wasn't an overnight
13 process.
14 So, like I say, unfortunately it was a little "too
15 little too late", but I don't blame the business for
16 that.
17 SIR MARTIN MOORE-BICK: Very well, thank you.
18 Sorry, Ms Grange, yes.
19 MS GRANGE: No, it's fine.
20 Is it right at this time that you had literally
21 thousands of emails in your inbox that you had to try
22 and manage?
23 A. Yes. Yeah.
24 Q. And there was a meeting held with Tony Millichap on
25 27 February 2015 with Susan Ewart present; do you

188

1 remember that?
 2 A. Yes.
 3 Q. And at that point he acknowledged that you were under
 4 pressure and he also said he was impressed at the way
 5 you had managed the team. Do you remember that?
 6 A. Yes.
 7 Q. Was that meeting an attempt by Kingspan to give you some
 8 assistance with your workload, to try and understand the
 9 pressures you were under and give you some support?
 10 A. It was a disciplinary, wasn't it? It was a mark on the
 11 paper that they'd had the chat with me that they were
 12 trying to get me to sort my issues out, I think.
 13 Q. If we go to the notes of that meeting, {KIN00008697}, we
 14 can see at the first paragraph on the top of the first
 15 page it says:
 16 "Set the scene. Relevant conversation to have ...
 17 as a practical point of view. You are under pressure +
 18 [I think] push that. You do a good job + I want to
 19 separate professional ability -- my team doing good
 20 role."
 21 Do you see that there?
 22 A. Yeah.
 23 Q. Then if we go on page 3 {KIN00008697/3} to look at these
 24 notes, we can see he makes a comment about your
 25 demeanour there:

189

1 "Overall demeanour generally, exceptionally tired +
 2 perspiring a lot.
 3 "Personal changes ...
 4 "Don't sleep brilliantly ..."
 5 Do you see that there?
 6 A. Yeah.
 7 Q. So you're telling him that you're -- well, he's noticing
 8 something about your demeanour, that you're
 9 exceptionally tired at that point; is that right?
 10 A. Yeah.
 11 Q. Is that how you felt? And you told him you're not
 12 sleeping brilliantly at the time. Do you see that
 13 there?
 14 A. Yeah.
 15 Q. And did you get disciplined at that time? This is
 16 February 2015.
 17 A. I think this is -- I don't know what it is, it's a sort
 18 of precursor or it's a mark on the paper to -- it's
 19 a warning, isn't it? I think that's what it is.
 20 Q. Yes.
 21 Then, moving forward in time, you're suspended by
 22 Adrian Pargeter at the beginning of August 2015, and
 23 it's right, isn't it, that was for falling asleep on
 24 duty and driving a company car against management
 25 instruction? That's right, isn't it?

190

1 A. That's correct, yes.
 2 Q. Just to be clear, at any time, were you ever disciplined
 3 in any way about your action in respect of your role in
 4 relation to K15?
 5 A. No.
 6 Q. No, that was never part of it, was it?
 7 A. Not at all.
 8 Q. No.
 9 If we go on, you have a meeting with Adrian Pargeter
 10 on 17 and 18 August. If we can go to the notes of that
 11 meeting, {KIN00022322}, these are the handwritten notes
 12 of the meeting.
 13 On page 9 {KIN00022322/9} I want to ask you about
 14 a number of things you said during this meeting, and in
 15 the next meeting, about the pressures on you and what
 16 was happening in your job.
 17 On page 9 of the notes from the meeting, and about
 18 a quarter of the way down the page, you're recorded as
 19 saying, it's under I, the second I on that page, and in
 20 the third line down there it begins:
 21 "I had to be careful, a lot of responsibility,
 22 tricky line, some would question playing in market not
 23 suitable for."
 24 Do you see that there?
 25 A. Yes.

191

1 Q. Are you referring to K15 there?
 2 A. I'm referring to Kooltherm and K15, yes, I believe.
 3 Q. Right, so the whole lot, all the insulation products you
 4 were responsible for. Is it right you were saying you
 5 were having to toe a tricky line and some were
 6 questioning whether you should be playing in that market
 7 that it wasn't suitable for; yes?
 8 A. Yes, definitely.
 9 Q. Yes.
 10 If we can go to page 10 of 18 {KIN00022322/10} and
 11 to the end of the sixth line, under I, so if we look
 12 six lines down on the right-hand side, there's the word
 13 "Business", and it says there:
 14 "Business put me in a very difficult position last
 15 year, it was doing my technical integrity no good + say
 16 that our product was ok, my mission was to derail the
 17 whole process + not much fun. Pretend you are stupid.
 18 Got a bit of help from Matt Ball, reams of paper coming
 19 through on a monthly basis. I daren't miss anything."
 20 Do you see that there?
 21 A. Yeah.
 22 Q. Again, when you're referring there to "It was doing my
 23 technical integrity no good and say that our product was
 24 ok", are you referring there to K15 perhaps as well as
 25 other --

192

1 A. I was referring to the Kooltherm products, the class 0
2 issue and K15, yes.
3 Q. But also the above 18-metre problem?
4 A. And K -- yeah, yeah.
5 Q. Sorry, do you want to finish your answer?
6 A. And K5, we were having a lot of -- that was the external
7 wall board at the time, there were a lot of queries
8 around that, but I think those issues were resolved.
9 Q. Yes. And you say "my mission was to derail whole
10 process". What does that mean?
11 A. Okay, I was very emotional at this time, as you can
12 imagine. I read this now and I question, you know,
13 where my head was at at the time but, I mean, there are
14 some truths coming out here obviously. That's kind
15 of -- I was never told "You've got to derail the whole
16 process", but at the end of the day sometimes that was
17 my only sort of solution, because we weren't getting the
18 answers, I wasn't getting the product that I wanted out
19 of the production side of the business. So, you know,
20 I was put in an impossible situation.
21 Q. Yes, yes.
22 And the "Pretend you're stupid", is that that you
23 sometimes had to pretend that you didn't understand why
24 questions were being asked?
25 A. To a certain extent, yeah.

193

1 Q. Yes. If we go now to page 14 of 18 {KIN00022322/14}
2 here, and then if we look in the second paragraph, at
3 the end of the first line, so I think that's the second
4 paragraph beginning with I, and then you say:
5 "Why not" -- there's a question:
6 "Why not sure what to do?"
7 Then it says:
8 "Time, definitely, K15 project making sure none of
9 that being pulled off [the] wall. My main goals + this
10 one was failing not sure of answers + not sure what to
11 do, making up as going [along], I was trying to keep on
12 track ..."
13 So there you do seem to be referring specifically to
14 K15, don't you, there?
15 A. Yes.
16 Q. And "making sure none of that was pulled off the wall",
17 that's making sure no one realised that it shouldn't be
18 on the tall buildings and pulling it off; is that fair?
19 A. No, it was, we were dealing with the enquiries. They
20 were saying that, you know, "Unless you provided
21 evidence, we needed to pull it off the wall". So we
22 would then approach with the letters of comfort, we
23 would go out and find engineers and fire consultants
24 that would badge it, we would collate any fire
25 performance information on the ancillary products and

194

1 try and bring together a position, and we would pay
2 external consultants, BRE, Exova, whatever. That was
3 our strategy there.
4 Q. Yes.
5 A. But, yeah, ultimately we didn't want anyone that had
6 bought the Kingspan product to have had to remove it,
7 because they would never buy it again.
8 Q. Then if we go to page 15 {KIN00022322/15}, in the second
9 I in the margin, you say there:
10 "Time flies (sic), my priorities sat with live
11 projects."
12 Then I think you say:
13 "Shafted by TM."
14 Does that make sense?
15 A. I felt Tony left me in the lurch a little bit, because
16 he left at the time. I think that's all that was,
17 really.
18 Q. Yes.
19 Then do you say there -- is it right?
20 "Kept BRE sweet, damaged my integrity when just
21 being told to book a test."
22 Do you see that there?
23 A. Yeah.
24 Q. "So 50k wasted each time."
25 A. Yeah.

195

1 Q. "Might take longer + works all that matter, in my eyes
2 anyhow."
3 Just breaking that down, when you say "kept BRE
4 sweet", what were you referring to there? In what way
5 had you kept them sweet?
6 A. I don't really know that. I was -- there was no -- we
7 weren't bribing them or anything like that, it was more
8 a case of: I was a bit annoyed that we were booking
9 tests and then we weren't carrying them through because
10 I couldn't get hold of the products, you know, there was
11 no -- sometimes there wasn't the time for R&D, research
12 and development; there was more focus on selling
13 product.
14 Q. Yes.
15 A. Sometimes research and development came second, and that
16 isn't the right way round at all.
17 Q. Yes.
18 A. So, you know, that was -- I was just thinking I was
19 damaging my integrity by saying to Phil Clark, "Right,
20 we need the laboratory next month for 30 days" and then
21 I wasn't able to deliver on that.
22 Q. I see, yes.
23 A. So it was getting very frustrating towards the end.
24 Q. Yes. That's helpful.
25 Then if we go to page 31, and look at the fourth

196

1 line down -- sorry, go to page 17. Sorry, that's
 2 a wrong reference.
 3 Go to page 17 now {KIN00022322/17}. If we look in
 4 the fourth line down, you say there, just beneath the
 5 bit that's been redacted:
 6 "I know I am at fault + I know I should have done
 7 something + didn't, K15 not giving me anytime to take
 8 a break, maybe sooner depending on today. Not much
 9 holiday. TM threw stuff at you + got at you when not
 10 done."
 11 Do you see that there?
 12 A. Mm.
 13 Q. Then you say:
 14 "The real things tech + applications not
 15 supportive."
 16 Is that right? So I think you're saying there that
 17 with K15 you didn't have any time to take a break, you
 18 didn't have any time or you didn't take much holiday; is
 19 that right?
 20 A. Yeah, that's correct.
 21 Q. Then what do you mean when you say "TM threw stuff at
 22 you + got at you when not done"?
 23 A. I think I'm just emotionally venting there.
 24 Q. About your boss?
 25 A. Yeah, about my boss. At the end of the day Tony was

197

1 a good bloke.
 2 Q. And you're not saying he physically threw stuff at you,
 3 you're talking about work was being thrown at you; is
 4 that right?
 5 A. Yeah. At the end of the day, I think it was being
 6 thrown at all of us there.
 7 Q. Then I just want to look at the appeal hearing. So your
 8 employment with Kingspan was terminated, you appealed
 9 this, and you met with Richard Burnley, the managing
 10 director of Kingspan, and Elaine Gale, a human resources
 11 adviser, on 3 September 2015, and there are minutes of
 12 this meeting. I just want to take you through them.
 13 You say, and you've said it today again, in your
 14 witness statement that you're not confident of the
 15 accuracy of this as it was a highly emotional time and
 16 you were operating with minimal sleep and under extreme
 17 stress. Is that right? That remains --
 18 A. Yeah, yeah, definitely.
 19 Q. -- the position?
 20 If we can go, then, to {KIN00008681}, these are the
 21 notes of that appeal hearing. If we go to the bottom of
 22 the second page {KIN00008681/2}, to start with,
 23 four lines up, you say:
 24 "I don't really blame Kingspan, yes it's been
 25 a turbulent time and I have been put under excessive

198

1 stress. I am coming here with my hat held out to you
 2 really, because I am physically in a mess, I've -- it's
 3 been known to the business I think that I have always
 4 had a drug problem, obviously there were a number of
 5 times that people have joked with me when I have been
 6 going to Amsterdam [et cetera] ... that sort of thing
 7 ..."
 8 Then you say this:
 9 "I am surprised that nobody thought that my
 10 part-time hobby and lifestyle had taken a turn for the
 11 worse 18 months ago."
 12 You were saying that you were surprised that people
 13 hadn't appreciated that you were having a very difficult
 14 time 18 months before this; is that right?
 15 A. Yeah, definitely.
 16 Q. The suggestion is that they should have been aware. Do
 17 you think they should have been aware at the time of the
 18 stress and the pressure that you were under and the toll
 19 it was taking, in terms of your health?
 20 A. The thing is that everybody in the business -- it just
 21 seemed a very busy time and there was a lot going on.
 22 I think I handled -- sometimes outwardly I handled it
 23 quite effectively, so ... I don't know, perhaps they
 24 should have noticed but, you know, I can't blame them if
 25 they didn't.

199

1 Q. Yes.
 2 Then if we go on to page 5 {KIN00008681/5} of these
 3 notes, and if we look in the second "EG" down,
 4 Elaine Gale says to you:
 5 "As I understand it your role, or the work that you
 6 do has been fairly critical in terms of Kingspan's
 7 product being approved, in terms of fire safety?"
 8 Then you say this:
 9 "Yes I would say that I have been put in a situation
 10 where I have had to maintain performance that perhaps
 11 our products don't deserve. I have the ability to show
 12 that our products can be used in areas where you would
 13 normally require material which would be
 14 non-combustible; from a critical lifesaver perspective.
 15 I have performed in a number of tests in 2005, Kingspan
 16 changed the technology of our foam and we couldn't
 17 repeat those tests. We were outed by a consultant who
 18 we then had to fabricate a story to that the product
 19 still said what it did not the tin. Although I bucked
 20 at that point and said to my manager, at the time, that
 21 we are stretching the truth here and what we are going
 22 into an area ... where we cannot support the performance
 23 of the product. I wasn't the senior person there, we
 24 produced documentation and we inferred to the industry
 25 that our product could do something that potentially it

200

1 couldn't."

2 Do you see that there?

3 A. Yes.

4 Q. You're talking about the K15 product there, aren't you?

5 A. Yes.

6 Q. And you're talking about the fact you have done the

7 BS 8414 tests in 2004, 2005, and then there was the

8 change in technology and you couldn't repeat those

9 tests; that's right, isn't it?

10 A. They weren't initially repeated, no. Yeah. So, yes.

11 Q. When you say "We were outed by a consultant", can you

12 help us as to which consultant you're saying you were

13 outed by?

14 A. I think it could have been Wintech at the time, I can't

15 quite recollect.

16 Q. Yes. Then you say:

17 "I bucked at that point and said to my manager, at

18 the time, that we are stretching the truth here and what

19 we are going into an area ... where we cannot support

20 the performance ..."

21 What are you referring to there? Which manager is

22 it, and can you recall when you said that?

23 (Pause)

24 A. I think I would have communicated this up the ladder to

25 Malcolm and Phil, perhaps Tony. Like I say, it always

201

1 sat uncomfortably with me, what we were doing here.

2 Q. Yes. So you think you're referring --

3 A. I can't --

4 Q. You can't remember which manager?

5 A. No, no.

6 Q. Okay. So it could have been Philip Heath or

7 Tony Millichap, do you think?

8 A. Yeah. I think it was Phil, but ...

9 Q. And you say there:

10 "... at the time, that we are stretching the truth

11 here and what we are going into an area ... where we

12 cannot support the performance of the product. I wasn't

13 the senior person there, we produced documentation and

14 we inferred to the industry that our product could do

15 something that potentially it couldn't."

16 I just want to give you the chance to respond to

17 this. It's right, isn't it, that this was a deliberate

18 and calculated deceit by Kingspan in which you had

19 become embroiled?

20 A. Yes, that's correct.

21 Q. And it was part of an overarching strategy to achieve

22 the best possible sales of the product by every means

23 available; that's right, isn't it?

24 A. And that's the strategy adopted for all the products,

25 really. That is that everything that can possibly be

202

1 done is done to achieve sales.

2 Q. Yes.

3 Then if we go on, at page 7 {KIN00008681/7} of

4 this -- this is quite dense type here, but I want to ask

5 you about a section that's actually just near where the

6 redacted part is.

7 So at the end of that line where there is the

8 redaction, you say there:

9 "Also my colleague Adam Heath who has dealt with

10 a lot of the high rise issues, he was suffering stress,

11 because of the battering we were getting. It was very

12 difficult, we were aware that anything that we said

13 could have caused a legal problem for Kingspan we had to

14 be very careful in what we wrote and to be honest

15 I didn't have a lot of support and understanding from my

16 managers at that time because my boss Tony Millichap was

17 moving to another job role, so in his last month he

18 removed all of his responsibilities and said 'that's

19 your choice now'. There was no one out there ... that

20 was no specialist in the marketplace. It was on my

21 shoulders to make all of the decisions, and if anything

22 I kept our heads above water during that time ..."

23 Do you see that there? We can stop there.

24 Again, are you referring to -- the battering that

25 you're getting about high-rise issues, is that over K15?

203

1 A. Yes, definitely.

2 Q. Then if we continue on, we can see that you say below

3 that, so you said:

4 "... kept our heads above water during that

5 time ..."

6 Then you go on and say:

7 "... and although I might have been accused of

8 parking some of my important projects, at least the 230

9 high rise buildings that were being, that could have

10 asked to remove the Kingspan insulation off them, they

11 were never, as far as I am aware, we managed to evade

12 the problem. Kingspan couldn't say that we were

13 completely happy with the construction because we

14 weren't ... we couldn't high-light it to the person we

15 sold it to and the person at NHBC that it was an issue,

16 so I mean Adrian was very busy as soon as he took over

17 the role, sales team."

18 Do you see that there?

19 A. Yes.

20 Q. The 230 high-rise buildings, where had you got that

21 number from?

22 A. Once we started getting issues and queries, I made it my

23 team's responsibility to track all these projects, so we

24 dumped all the enquiries into a high-rise matrix,

25 an Excel sheet, which listed every single project, what

204

1 information had been sent, what the cladding was, the
 2 details of the build-up, et cetera, who the contractor
 3 was, if we'd managed to resolve the issue and, you know,
 4 which fire engineer we used and, you know, whether that
 5 information could be used elsewhere, that sort of thing.
 6 So it was a matrix we created, and it was about 230 when
 7 I left Kingspan.
 8 Q. Right, yes. I think you have already accepted there
 9 were hundreds of high-rise buildings with K15 in the
 10 external system by August 2015, weren't there?
 11 A. Yeah, definitely.
 12 MS GRANGE: Mr Chairman, I've come to the end of my
 13 questions. If we could have a break now --
 14 SIR MARTIN MOORE-BICK: The usual break?
 15 MS GRANGE: The usual break, just to sweep up anything
 16 else --
 17 SIR MARTIN MOORE-BICK: Yes, of course.
 18 MS GRANGE: -- that would be helpful.
 19 SIR MARTIN MOORE-BICK: Well, Mr Meredith, when counsel
 20 thinks she's got to the end of her questions, she needs
 21 a short time just to check there aren't any things that
 22 have been overlooked, and we also have to allow the
 23 opportunity for people who are not in the room but
 24 following the Inquiry to make suggestions. So we'll
 25 have ten minutes.

205

1 Will ten minutes be all right, for the time being at
 2 least?
 3 MS GRANGE: I think so. I'm getting nods behind me, so
 4 let's go for ten minutes.
 5 SIR MARTIN MOORE-BICK: Yes. I think what we'll say is we
 6 will resume at 4.30, unless we get a message that more
 7 time is required, in which case it will be a bit longer.
 8 THE WITNESS: Okay.
 9 SIR MARTIN MOORE-BICK: All right? So would you like to go
 10 with the usher, and again no talking about your
 11 evidence, please.
 12 (Pause)
 13 Right, Ms Grange, we will say 4.30. If you need
 14 more time, you'll let us know.
 15 MS GRANGE: Thank you.
 16 SIR MARTIN MOORE-BICK: All right. Thank you.
 17 (4.20 pm)
 18 (A short break)
 19 (4.30 pm)
 20 SIR MARTIN MOORE-BICK: Right, Mr Meredith, we'll see if
 21 Ms Grange has found any more questions.
 22 Yes, Ms Grange.
 23 MS GRANGE: Just two very short questions.
 24 The first one: back to the disciplinary meetings
 25 that you had, when you were explaining all the detail

206

1 you gave about K15, the pressure you were under, having
 2 to maintain the lie, et cetera, did Mr Burnley express
 3 any surprise at any point during that meeting about what
 4 you were telling him about all of that?
 5 A. He came to the NHBC meeting earlier in the year or the
 6 year before, and it was at that meeting I think he was
 7 really au fait with the problems that we had with K15,
 8 and it was after that meeting that he said, "We really
 9 need to get Ivor the answers for these questions".
 10 Q. Right, yes.
 11 A. So I don't think he was surprised at that point, no.
 12 Q. No, okay.
 13 Then one final question: is there, looking back on
 14 it -- and we have gone through a lot now in the last
 15 two days -- is there anything you would have done
 16 differently or anything further you want to say at this
 17 point?
 18 A. Firstly, the non-combustible board was a UAC Berhad
 19 board which was known as -- I think it was marketed as
 20 Supalux in the UK, and it was a cellulose fibre cement
 21 board. So as opposed to -- although it had particles in
 22 it, it had cellulose fibres in it as well. So, yes, not
 23 traditionally suitable for the outside of a cladding,
 24 but it was a non-combustible board.
 25 I think I would have tried to speak up more about my

207

1 fears and my concerns, things might have gone very
 2 differently if I had, and obviously my sympathies go out
 3 to everyone that's been involved in this tragedy,
 4 really.
 5 MS GRANGE: Yes. Thank you.
 6 Mr Chairman, thank you, that's all.
 7 SIR MARTIN MOORE-BICK: Well, Mr Meredith, it just remains
 8 for me to thank you very much on behalf of the panel for
 9 coming here to give your evidence. I know it's gone on
 10 a long time, and I think we can all understand that it
 11 can't have been easy for you to answer the sort of
 12 questions you have been asked over the last couple of
 13 days, but I would like you to go away knowing that it's
 14 been extremely useful to us to hear what you have to
 15 say. Your evidence will help us a lot, and we are very
 16 grateful to you for coming.
 17 THE WITNESS: Okay.
 18 SIR MARTIN MOORE-BICK: Right. Well, thank you very much,
 19 and now you're free to go, and the usher will look after
 20 you.
 21 THE WITNESS: Thank you.
 22 (The witness withdrew)
 23 SIR MARTIN MOORE-BICK: Thank you, Ms Grange.
 24 MS GRANGE: Yes, thank you.
 25 SIR MARTIN MOORE-BICK: And that must be enough for today.

208

1 MS GRANGE: That's it, and another Kingspan witness 211
2 tomorrow.
3 SIR MARTIN MOORE-BICK: Right, thank you very much.
4 Well, we will break at that point and we will resume
5 at 10 o'clock tomorrow morning, please. Thank you very
6 much.
7 MS GRANGE: Thank you.
8 (4.36 pm)
9 (The hearing adjourned until 10 am
10 on Wednesday, 25 November 2020)
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

209

1 INDEX
2 PAGE
3 MR IVOR MEREDITH (continued)1
4
5 Questions from COUNSEL TO THE INQUIRY1
6 (continued)
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

210

A						
a1 (1) 25:7	actively (2) 71:16	134:18 138:4 140:13	alongside (3) 129:16	anthony (1) 49:15	148:10	43:22 44:11 82:25
a2 (1) 25:7	164:24	144:14 146:18 160:22	143:25 145:25	anybody (5) 25:25	approval (38) 9:7,25	94:4 95:4 103:16
a7 (1) 51:8	activity (1) 185:24	169:23 172:14 180:20	already (6) 40:18 52:17	27:11 49:23 65:15	13:25 22:2,20,22	106:16 125:9 128:8
ability (4) 114:22	actual (4) 80:1 131:20	182:11,18 183:12	78:11 94:1 104:15	165:18	32:1,3,7,25 33:2 35:6	129:21 147:15 169:19
179:20 189:19 200:11	163:14,16	207:8 208:19	205:8	anyhow (1) 196:2	36:15,16,21,25 37:12	177:14,18 187:24
able (9) 4:3 52:2 60:1	actually (29) 6:20 8:13	afterburn (1) 60:11	also (46) 3:1 5:2 6:6	anymore (3) 14:18	39:13 41:14 43:3	asleep (1) 190:23
68:25 140:8 151:17	10:16 18:25 36:17	afternoon (1) 44:14	9:14 14:24 19:15,23	39:16 102:21	46:13 53:7 59:12,15	asm (2) 106:23,24
167:19 180:18 196:21	38:23 39:3 43:9 48:14	again (46) 1:23 2:7,9	20:20,20 26:22 28:11	anyone (16) 18:13	62:2,7 74:11 75:19	assembly (1) 51:12
above (50) 3:11 6:8	70:13 72:14 74:25	27:5,7 28:18 39:5	29:1 37:10 50:21	19:10 44:16 50:2	76:8 85:14 86:9 89:17	assent (4) 44:2,9
16:20 26:19 44:13	80:15 88:11 98:1	43:6,13 57:2,17 60:13	53:23 55:3 61:24	57:18 61:18 62:18	102:6 143:25 146:1,9	45:16,17
51:11 53:10 57:5	99:24 113:14 125:11	69:7,7,7,11 82:4,5	71:11 73:22 93:14	65:21 81:24 117:16	148:24 156:10	assertive (1) 133:1
64:24 66:17 68:7,11	126:4 128:17 133:4,15	83:12 85:11 89:10	98:2 104:20 112:11	156:3 157:16 169:13	approved (17) 2:24 3:6	assess (1) 116:18
70:19 71:8 74:19	139:2 151:15 157:8	91:23 109:11 114:15	120:5 123:8 134:17,21	170:2,8 195:5	4:11 24:13,14 25:2	assessed (2) 2:7 13:23
75:16 76:10 82:14	165:14 185:11 188:7	118:7 124:4,17 129:13	139:9 143:8,25 144:21	anything (25) 11:13	26:18 27:15 32:6	assessment (14) 13:23
84:11 89:16 98:3	203:5	133:3 149:16 152:18	148:25 151:6 152:20	13:18,22 15:10 30:4	34:22 69:22 71:24	79:6 80:15 114:21
99:21,25 106:17 113:8	ad (3) 32:13 42:19 51:8	155:21 158:19 161:6	154:22,24 155:1	32:20 41:16 57:4 74:5	88:15 125:14 174:25	127:23 135:8 137:24
115:15 116:2	adam (2) 81:23 203:9	163:18 171:22 180:22	160:25 174:24	100:17 103:21	182:2 200:7	143:23 144:23 147:12
118:11,16 123:1,24	adapt (1) 108:5	182:4 186:3 187:1,17	175:5,16 182:22 189:4	105:7,13 106:19	approving (2) 43:18	149:10 151:18 165:14
126:20 128:18,19	adb (7) 3:10,19 34:24	192:22 195:7 198:13	193:3 203:9 205:22	114:22 117:15 132:23	143:5	166:14
130:21 134:2,24 140:2	46:16 49:19 51:5	203:24 206:10	alternative (15) 3:22	174:17 192:19 196:7	approximately (1) 96:7	assessments (6) 63:18
144:5 168:24	69:21	against (9) 39:16	5:3,21 24:5,6 69:20	203:12,21 205:15	april (3) 1:21 2:1 139:24	114:23 153:5 154:23
173:10,15 174:22	add (3) 106:19 120:5,7	112:12 122:18 131:12	70:6 75:18 88:19	207:15,16	architect (3) 79:16 81:2	167:17 176:6
175:8 177:13 178:12	added (1) 144:11	135:7 164:23 168:9	97:1,14 103:3 104:3	anytime (1) 197:7	164:11	assessmentscertificatesdocument
179:7 193:3 203:22	addendum (1) 28:2	181:20 190:24	174:3 177:6	anyway (7) 7:5 61:12	architects (2) 78:21	(1) 79:16
204:4	addict (1) 184:9	agenda (1) 61:18	alternatively (1) 96:22	80:18 103:6,7 150:18	90:17	assessors (1) 9:9
abovementioned (1)	addiction (1) 182:24	agendas (1) 184:14	alternatives (1) 104:12	160:3	architectscontractors	assist (1) 172:19
70:25	additional (4) 19:15,23	agent (8)	although (17) 5:17	anywhere (1) 25:3	(1) 79:19	assistance (3) 61:16
absence (3) 65:24	174:2,11	119:11,12,13,16,18	20:8,20 37:7 51:20	ap (2) 35:10 37:4	area (13) 46:23 52:8	146:19 189:8
174:19 175:5	additive (1) 112:23	125:25 160:8 169:1	73:22 80:22 85:11	apart (2) 63:13 102:21	54:5 61:9 65:22 79:11	assistants (1) 132:8
absolute (1) 148:9	address (2) 80:19 186:1	agents (1) 119:22	86:23 87:23 124:24	apartment (1) 61:21	146:4 151:23,24	assisted (1) 146:15
accept (17) 11:19 40:4	addresses (1) 31:13	aggressive (1) 133:5	134:24 151:15 156:17	apologies (1) 58:22	162:14 200:22 201:19	assume (2) 82:10 176:3
48:24 81:12,17	adept (1) 53:13	ago (2) 154:6 199:11	200:19 204:7 207:21	apologise (1) 140:22	202:11	assumed (2) 47:25
82:12,14 91:17 98:10	adequate (2) 60:6 69:24	agree (31) 3:17 6:13,18	aluminium (2) 60:19	apparent (1) 170:7	areas (9) 4:18 41:7	117:7
133:10 134:23 141:25	adequately (1) 77:20	10:14 11:23 12:11,12	158:23	apparently (2) 61:8,15	59:4,18 61:15 106:25	assumes (1) 168:24
144:4,7 151:2 174:20	adjoined (1) 209:9	14:6 17:15 24:1 25:16	always (16) 12:8,12	appeal (5) 135:9	116:18 118:13 200:12	assurance (2) 66:24
186:10	adjournment (1) 117:21	27:20 28:7 29:6 33:23	38:15 55:23 69:4	182:10,18 198:7,21	arent (9) 14:18,19 25:9	90:7
acceptable (7) 17:7	administrator (1) 9:3	58:24 71:16 93:19	75:19 92:24 105:21	appealed (1) 198:8	41:22 74:8 150:7	assured (5) 66:18
34:4 51:13 166:13	admit (1) 12:1	109:4,6 111:17 121:11	120:25 122:8 125:1	appear (5) 10:9 110:17	175:15 201:4 205:21	67:2,3,4,8
173:15 174:3 182:6	adopt (4) 116:5,11	123:19 129:19 133:2	156:15 184:22 186:12	157:10 160:20 162:3	argued (2) 108:21,22	astec (6) 66:9 87:6
175:1 176:1,22	119:2 133:7	138:13 144:15 153:10	199:3 201:25	appeared (1) 14:24	arguing (3) 131:21	91:24 109:13,18,22
according (1) 124:8	adopted (5) 70:20 73:19	165:5 171:14 181:8	ambiguity (5) 27:19	appears (10) 13:5 23:11	132:1 135:4	ath (1) 60:5
accreditation (1) 53:9	75:17 164:21 202:24	agreed (7) 59:25 71:22	131:19 141:15 142:8,9	42:12 50:21 58:11	argument (1) 171:11	attach (1) 9:7
accuracy (1) 198:15	adopting (1) 103:13	82:2 117:6 130:3	ambiguous (1) 29:7	114:5 133:20 164:5	arising (2) 78:21 118:3	attached (11) 16:10
accurate (3) 82:18	adrian (7) 101:2	138:14 150:24	amended (8) 1:20 2:1	173:16 185:18	around (20) 13:12	31:25 33:2 53:8 68:8
108:23 142:1	160:5,17 162:24	agreeing (1) 172:19	15:18 50:13 51:19	applicability (1) 29:25	27:19 32:8 46:22	69:17 70:22,23
accused (1) 204:7	190:22 191:9 204:16	agreement (4) 130:13	106:18 107:25 141:18	applicable (3) 73:22	49:11,17,18,23 90:22	155:2,3,5
achieve (7) 53:19 73:25	advantageous (1)	149:1,6 151:6	amount (4) 10:20 57:9	152:4,5	102:5 110:10 125:11	attaches (1) 53:6
127:7 181:16,17	104:13	agrement (1) 30:9	178:23 179:2	applicant (1) 19:4	139:7 154:20 163:13	attaching (4) 9:4 13:1
202:21 203:1	adverse (1) 17:20	agrment (1) 89:17	amounts (1) 80:3	application (5) 54:1	187:14,15 188:6,11	15:22 71:2
achieved (2) 89:3	adversely (1) 149:9	ahead (2) 176:19	amsterdam (1) 199:6	63:13 147:16 148:11	193:8	attempt (2) 135:13
107:21	advice (6) 6:9 15:1 48:5	184:14	ancillary (1) 194:25	167:20	arup (12) 143:23	189:7
acknowledge (1) 168:25	76:7 91:17 148:13	aimed (2) 131:4 132:12	andrew (10) 34:21	applications (3)	144:3,6,15,18 146:19	attempted (1) 172:17
acknowledged (2) 137:5	advise (4) 41:16 95:24	air (1) 115:24	35:11 37:5 39:9 43:19	53:18,22 197:14	147:3,15 165:14	attend (2) 131:7 153:2
189:3	175:6 176:19	alastair (7) 78:20	78:20 79:12,24 81:22	applied (2) 26:22 28:10	172:15,18,19	attendance (2) 14:14
acknowledging (1)	advised (2) 102:23	79:2,8,10,23,25 87:19	146:24	apply (4) 29:13 73:2	arups (2) 166:19 167:15	186:5
137:21	141:6	albeit (1) 163:15	andy (2) 36:4 79:13	118:11,13	asap (1) 11:12	attended (2) 14:11
acm (1) 55:19	adviser (1) 198:11	alerted (1) 49:5	angling (1) 171:21	applying (2) 63:24	aside (1) 179:16	172:24
acting (1) 17:25	advisers (2) 81:21	alistair (1) 79:1	animal (1) 120:19	177:7	ask (29) 1:6 7:8 13:2	attention (3) 87:5
action (6) 29:22 65:2	157:21	alleviate (1) 143:22	annoyed (1) 196:8	appointment (1) 186:7	39:13 40:17 41:24	128:17 145:6
122:18 132:18 187:4	advising (2) 90:25 96:24	alliance (1) 155:17	another (22) 6:2 12:22	appreciate (9) 5:4 40:15	50:8 57:2 67:25 79:6	attribute (1) 20:21
191:3	advocate (1) 166:12	allocate (1) 185:24	15:17 21:12 34:19	66:13 80:6 88:21	93:25 94:1,9 97:5	au (5) 11:20 18:5 33:8
actionable (1) 178:23	advocating (1) 62:25	allow (8) 35:10 53:18	36:17 45:17 61:24	93:13 97:2 103:12	102:5 109:11,14	122:1 207:7
	affect (1) 149:9	69:22 70:2,9 84:25	78:18 94:21 95:3	182:12	118:25 129:13 133:3	audited (1) 112:10
	affected (2) 95:22 96:6	112:10 205:22	122:7 130:21 136:6	appreciated (3) 37:14	157:1 159:16 169:12	august (30) 18:25
	afford (2) 120:21 168:13	allowed (5) 15:4 85:12	139:23 143:13 153:2	103:21 199:13	171:25 179:12	42:1,7,9,14,15
	affordable (1) 107:22	144:3 181:7 182:3	172:3,22 184:2 203:17	approach (13) 11:11	182:9,15 191:13 203:4	50:12,21 52:5
	afforded (1) 146:3	allowing (1) 21:1	209:1	17:15 18:4 125:1,14	asked (19) 22:3,8 29:21	60:23,25 79:9,12,23
	after (33) 13:5,19 15:10	allows (1) 99:8	answer (6) 22:11 37:3	133:7 140:7 146:8	45:9 55:7 78:10 79:5	84:12 145:3,6
	16:21 19:9 35:12	allude (1) 92:19	43:7 77:11 193:5	168:24 169:10 176:4	91:23 94:15 118:8	146:18,22 147:2,19
	47:19 52:19 65:13,18	alone (2) 181:5 182:1	208:11	179:14 194:22	139:13 141:2 143:9	150:6,13 153:3,20
	83:3 84:13 92:21	along (6) 20:9 21:21	answers (6) 14:5 17:14	approaches (1) 176:8	157:7 164:22 184:18	164:7 182:17 190:22
	103:2 106:4 115:15	25:12 111:13 140:5	169:20 193:18 194:10	appropriate (6) 34:15	193:24 204:10 208:12	191:10 205:10
	126:10 131:1 132:5	194:11	207:9	69:23 70:4,10 76:8	asking (17) 1:18 41:22	australia (1) 56:19

Opus 2 International
Official Court Reporters

transcripts@opus2.com
+44 (0)20 3008 5900

cellulose (2) 207:20,22	chance (5) 16:4 46:2	75:10,11 77:6,8 85:3	152:13 174:4,12 180:1	compliant (1) 141:14	considerably (2) 104:2,6	145:9 156:4
celotex (12) 84:8,14	62:4 96:25 202:16	100:4 180:15,19	184:19 187:4 205:12	complicated (3) 81:7	consideration (1) 91:9	copies (1) 163:17
163:7,10,24 164:6,20	change (7) 2:16	181:25 193:1	comes (3) 86:4 113:24	121:15 122:6	considerations (1)	coppock (2) 53:4
165:12,17,20 166:1,6	19:14,21 27:16 83:7	classico (1) 159:8	126:19	comply (3) 3:4,18 95:24	23:12	154:13
cement (4) 64:8 98:8,8	154:25 201:8	classification (7) 23:22	comfort (9) 153:4,7,11	component (7) 53:15	considered (21) 8:10,11	copy (10) 15:22 16:3
207:20	changed (7) 21:13	67:8 73:11 98:19	155:24 156:12,17,18	54:22 55:14 69:6	23:20 24:3,7 25:4,5,21	31:20,21 79:6
cementitious (1) 92:8	34:15 51:5 150:13	128:4 136:16 141:22	172:15 194:22	88:22,25 124:13	26:16 27:7,10,14	163:10,14
central (2) 52:13 158:14	156:23 180:21 200:16	classifications (1) 148:6	comfortable (5) 63:9	components (8)	32:14 34:8 42:22,24	164:10,13,14
centres (1) 107:12	changes (4) 11:19 19:21	classified (3) 2:20	149:9 151:17 168:18	28:21,23 73:16 90:22	43:8 50:4 51:2 71:25	copying (10) 13:3 53:5
ceo (1) 94:20	115:20 190:3	133:11 139:4	182:4	97:25 98:2 99:19	131:23	66:10 95:12 126:20
cert (1) 66:14	characterisation (1)	classify (1) 134:25	coming (18) 38:6 39:16	125:19	considering (2) 53:24	135:16 140:19 160:17
certain (6) 38:13	70:1	clause (5) 15:1 19:18	40:21 43:10 97:25	composite (5) 8:18	79:4	163:1 173:6
165:25 175:17 182:18	characteristic (1) 121:2	33:20 181:6 182:2	112:25 113:1 136:3	60:19 181:2,13,23	considers (1) 177:5	core (2) 181:15,15
185:6 193:25	characteristics (1) 85:7	clauses (1) 6:14	142:15 143:13 168:9	composition (1) 119:20	constantly (3)	corner (2) 1:23 42:5
certificate (99) 1:19,21	charlotteteadam (1)	clean (1) 187:4	170:10 175:16 192:18	compressed (1) 55:18	120:18,19 168:9	corporate (1) 156:8
2:1,5 4:1,4,15	147:2	clear (17) 13:9 40:21	193:14 199:1 208:9,16	compromised (1) 135:2	constituent (1) 162:16	correct (44) 7:21 14:9
6:2,10,20,23	chaser (1) 13:1	47:13 85:20 93:9	comment (14) 3:8 4:17	concentrated (1) 41:7	constructed (1) 109:20	17:19 28:6 40:8 41:11
7:9,14,19,24	chasing (2) 9:21 10:4	110:13 118:15 126:24	9:10,14 11:17 35:10	concern (5) 21:3 59:18	construction (20) 2:12	47:24 48:5,8 52:1,25
8:15,16,23 9:5,8	chat (3) 81:10 183:12	128:13 134:6 136:22	38:1 54:20 85:25	64:12 105:14 183:11	3:13 16:15,18 34:3	62:11 68:23 71:15
10:1,5 11:3,21,25	189:11	148:3 149:20 166:23	115:5 141:20 153:25	concerned (14) 37:17	53:15,25 75:11 77:7	74:4 76:23 86:19 90:1
12:2,4,13 14:7,17	cheap (1) 30:8	171:18 178:12 191:2	184:8 189:24	38:15 59:19 72:6	81:4 85:22 92:10	103:18 104:18 111:20
15:2,19,23 16:25	cheaper (1) 104:12	clearer (1) 122:4	comments (13) 10:11	102:16 105:1,19,21	101:13 143:9	113:9 114:7 124:16,19
17:6,18,22 18:2,6 19:1	check (9) 10:8,10	clearly (10) 28:19 47:14	13:12 17:10 21:2 93:8	123:10 151:13 174:25	163:12,16,17,22	142:20 145:20,22
22:5,10,20,22,23	19:6,10 30:3 46:14	73:17 104:25 141:13	96:23 123:9 137:23	175:25 181:12 183:2	174:21 204:13	148:7 153:1 155:20
23:11 25:21 26:4,13	81:24 102:20 205:21	155:9 176:25 177:9	149:2 151:8 156:5	concerning (3) 19:16,23	consult (1) 132:8	156:22,25 158:11
27:11 29:21 30:14	checked (1) 12:8	178:25 179:4	169:20 182:18	66:18	consultant (6) 79:5	165:6 167:2 171:21
31:4,10 32:12	checking (2) 33:9 72:14	clg0000022496 (1) 3:10	commercial (7) 17:21	concerns (13) 61:14	147:13 167:19 200:17	174:9 181:6 182:25
33:2,10,12,18,19,23	chemical (7) 119:19	client (3) 78:24 177:5	32:4 82:23,24 91:7	65:5,9,20,24 105:5	201:11,12	185:24 191:1 197:20
35:13 38:23 40:22	122:3 125:19 138:25	178:20	155:12 161:10	139:10 143:22 156:5	consultants (6) 40:1	202:20
41:2,10,20,25	162:16 168:2,14	clients (2) 139:18 179:1	commercially (4) 31:7	181:9,10,25 208:1	144:4 146:2 165:11	corrected (2) 6:4 33:24
42:3,7,13 43:13 44:25	chemicals (1) 120:20	clinging (1) 74:5	166:11,25 168:7	concrete (3) 26:24	194:23 195:2	correctly (4) 5:16 57:11
45:2,6,10 46:19 47:19	chemist (1) 171:22	clip (1) 161:24	commissioned (1)	51:14 61:9	contact (6) 6:15 13:15	161:11 181:22
50:11,12,18,20 51:1	chemistry (2) 167:10	close (5) 47:7	148:23	concurrently (1) 131:10	14:25 15:3,5 49:12	correspondence (9)
52:4,19,21 53:7 54:7	171:23	114:18,20,22 128:16	commit (1) 139:14	conditions (2) 23:5 92:9	contacted (2) 37:8	15:17 44:1 45:23
89:18 96:1 99:6,8	chemists (1) 54:10	closed (1) 116:11	commitments (2)	condoned (1) 18:11	46:18	88:13 96:20 121:14
118:5,6,10,12 173:19	chests (1) 47:7	closely (4) 67:4 70:24	173:25 174:10	condoning (1) 18:7	contacts (1) 11:21	122:5 133:25 135:16
174:8,17	chief (1) 173:7	71:2 167:11	committing (1) 122:23	conductivity (2) 120:24	content (4) 46:19 97:9	cost (5) 30:9 104:1,6,7
certificates (14) 6:14	china (1) 168:5	closeness (1) 114:25	common (2) 80:14	121:24	129:15 177:18	146:8
10:8,10,13 18:4,21	choice (1) 203:19	clouded (1) 56:3	183:15	confidence (3) 60:18	contention (1) 92:6	costs (3) 93:12
30:9 37:18 38:24	choose (1) 129:7	clutching (1) 30:4	communicated (1)	81:2 146:5	context (1) 122:16	166:13,14
43:15,18 54:18 62:8	chose (1) 130:10	code (1) 150:16	201:24	confident (8) 75:15,22	continue (5) 1:4 48:22	couldnt (27) 5:22 20:19
66:25	circulated (3) 6:21	collaboration (1) 144:17	communities (1) 49:6	85:15 125:12 148:10	84:22 168:24 204:2	21:10,15 25:24 63:14
certification (6) 36:2	11:14 52:4	collate (1) 194:24	companies (1) 67:15	163:25 168:19 198:14	continued (10) 1:8,15	75:23 86:21,21 91:4
39:24 112:7 125:22	circulation (1) 9:12	collated (1) 144:3	companiessic (1) 30:6	confidential (4) 9:13	47:11 85:16	99:20 100:24
154:4,11	circumstances (2) 26:20	colleague (1) 203:9	company (7) 33:5 52:9	21:9,12 125:20	128:18,19,22 185:25	120:21,21,21 167:5
certified (1) 169:10	28:9	column (2) 111:8	135:18 170:11	confidently (1) 76:9	210:3,6	168:6 170:23 180:22
certify (3) 86:11,12	cladding (51) 20:23	159:10	184:13,16 190:24	configuration (2) 62:13	continues (4) 47:10	181:18 196:10 200:16
170:10	26:20 28:9 29:10	columns (1) 111:13	compared (4) 17:1	174:7	166:9 173:24 187:3	201:1,8 202:15
certs (1) 66:19	45:2,4 51:10 55:6,16	combination (1) 16:17	30:8,10 165:20	configurations (1)	continuing (2) 21:4	204:12,14
cetera (5) 88:5 132:8	61:9 62:23 64:20	combustibility (47)	34:7	156:20	174:18	council (1) 94:10
199:6 205:2 207:2	67:13,18,20 72:13,20	3:7,14 4:24 5:21,23	comparison (1) 89:3	confirm (4) 89:19 107:1	contract (2) 18:21 19:6	counsel (3) 1:15 205:19
chain (43) 7:6 8:22 9:1	73:19 75:10,12	23:21 24:3,8,15,16,21	compensate (1) 83:1	124:20 134:2	contractor (1) 205:2	210:5
11:5 12:22,23,24	77:6,9,21 78:5 80:6,23	25:1,8,13,22 26:17,23	competing (1) 84:16	confirmation (8) 68:8	contractors (1) 32:10	country (1) 32:8
15:17 36:18 39:7	83:6 88:3,24 89:2,4	27:8,9,13,14,18	competitor (1) 84:20	69:18 90:19 102:18	contracts (1) 131:12	couple (4) 56:20 180:15
43:25 45:14,21,23	92:9 93:11 98:11	28:12,15,21,25 29:4,5	competitors (1) 55:14	105:3 106:16 154:21	contrary (2) 25:13	184:12 208:12
60:23,25 78:16,18,19	99:20 103:12 104:3	31:5 32:15 33:5,17,21	complaint (3) 92:18	177:4	148:13	course (7) 30:20 145:18
79:21 83:13 86:3 87:1	111:16 116:3 127:23	34:8,10,11,13	137:16 150:16	confirmed (5) 89:6 90:8	contribute (1) 2:10	158:1 167:24
91:22 96:16 103:5	135:20,21 136:5	42:23,25 47:14	complaints (2) 137:5,10	134:10,17 170:1	contribution (1) 136:6	186:23,23 205:17
105:7 113:10 121:7	141:7,8,10 147:8	51:3,8,19 55:12 62:9	complete (5) 32:5 51:12	confirming (3) 60:13,17	control (18) 22:13 32:1	courtesy (1) 61:8
126:10,12 127:9,10	148:25 159:2 205:1	66:12 88:17	53:23 69:3 79:18	89:23	35:7 44:1,9 45:17	cover (11) 7:19 45:3
130:20 133:14,16	207:23	combustible (13) 24:25	completed (4) 67:12	confirms (1) 38:1	48:23 62:7 68:6,11,16	48:12 59:14 66:15
137:18 153:19 157:23	claims (2) 20:1 185:19	25:14 45:1 64:6 69:23	90:18 141:4 148:20	confuse (1) 74:25	75:20 76:8 85:14	86:8,21,21 87:25
162:22 164:22 183:8	clarify (1) 66:20	70:3,10 72:12,19	completely (5) 20:21	confusion (1) 155:7	86:13 129:25 155:16	93:11 94:6
185:21	clarity (5) 135:6 148:9	75:9,13 103:12 147:8	33:8 99:1 100:21	congruence (1) 112:12	169:3	coverall (1) 86:23
chairman (7) 57:13	163:18,25 186:4	come (38) 1:6 4:14 6:1	204:13	congruent (1) 130:1	controls (1) 77:22	covered (1) 12:4
117:9 118:8 171:17	clark (5) 126:21	8:1 21:21 37:11,23	complex (1) 88:10	conjunction (3) 45:1	conversation (6) 18:17	cpds (1) 79:19
179:23 205:12 208:6	134:18,21 169:15	38:2,20 39:3 40:9,12	compliance (17) 3:23	77:20 177:24	26:5 46:22 49:14,22	create (1) 143:23
challenge (4) 131:11	196:19	55:2 57:16 75:19	5:3 24:5,6 63:7 69:21	connection (1) 134:1	189:16	created (1) 205:6
132:21 142:23 164:1	clarke (10) 11:6 13:3,7	78:17 80:12 81:10	70:6 75:18 78:11	consequence (2) 166:20	coordinator (2)	criteria (15) 23:22
challenged (2) 35:8	15:25 16:6 39:9 81:23	85:14 96:23 109:10	80:13 85:10 89:16	171:10	137:5,10	42:24 64:7 80:16 81:6
149:22	92:1 93:7 106:8	110:12 117:9,14	95:5 97:2,14 146:7	consider (6) 78:4	copied (11) 31:14 34:21	98:20 114:3 127:7
challenges (1) 92:22	class (17) 2:20 23:18,22	122:16 125:11,25	176:21	115:24 116:3 148:15	35:10 43:21 44:3 61:5	134:6,9,14 135:8
challenging (1) 127:21	42:24 71:5,7 74:12	126:4,5 127:8,16		155:11,12	92:1 133:18 137:18	139:1 141:9 173:14

critical (5) 31:2 130:2 163:23 200:6,14 crossreferencing (1) 38:4 crucial (2) 59:3 85:6 cryptic (1) 123:5 crystallised (1) 167:6 culminated (1) 184:11 culminates (1) 173:5 culture (2) 133:1,4 current (11) 38:1 52:7 58:25 60:5 126:23 137:22 154:3,5 163:8 173:19 174:7 currently (10) 4:1 60:10,14 88:25 138:18 141:1,16,19 148:22 174:21 customer (3) 62:19 71:17 143:1 customers (7) 63:5 66:4 80:24 82:13,24 95:24 96:24	dealing (9) 19:8 36:2 57:9 62:18,19 157:22 177:12 186:14 194:19 dealings (2) 17:17 94:2 deals (2) 95:23 96:6 dealt (3) 66:3 80:21 203:9 dear (2) 9:24 137:8 deceit (1) 202:18 december (7) 15:21 16:1 50:19 93:6 95:11 96:17 173:20 decide (1) 154:25 decided (2) 14:24 109:14 decision (9) 41:14 52:17,21 54:6 58:7 86:15 127:1 130:15 133:10 decisions (1) 203:21 declaration (1) 186:5 decline (1) 174:20 decorative (3) 123:21,23 150:2 deduced (1) 70:21 deem (1) 141:11 deemed (3) 142:22 143:4 150:12 deep (3) 16:25 17:22 146:3 defamation (2) 179:2,3 defects (1) 174:23 defend (7) 93:1,9,14,19 131:11 133:6 164:23 defending (1) 92:22 defined (3) 2:21 16:19 34:3 definitely (33) 21:7,25 24:24 25:15 28:23 29:7 33:22 61:20 62:16 65:25 67:5 68:23 84:21 87:17 91:5,18 97:10 110:2 119:14 129:20 132:9 142:15 143:18 151:4 160:10 183:5 184:9 192:8 194:8 198:18 199:15 204:1 205:11 delay (3) 11:2 140:22 141:20 deleted (1) 103:8 deliberate (3) 11:2 71:19 202:17 deliberately (2) 71:20 72:2 delimiting (2) 13:10 14:8 delineation (1) 118:15 deliver (1) 196:21 demands (1) 146:9 demeanour (3) 189:25 190:1,8 demonstrate (7) 55:4 70:15 71:10 136:7 146:7 148:23 174:2 demonstrated (1) 54:24 demonstrates (1) 174:5 denied (1) 183:13 dense (2) 67:25 203:4 deny (1) 185:1 department (4) 8:1 49:5 88:9 185:18 depending (1) 197:8	depleting (2) 119:19,22 derail (3) 192:16 193:9,15 describe (2) 162:16 187:24 described (1) 160:6 describing (1) 87:19 description (2) 23:1 169:5 descriptions (1) 81:5 deserve (1) 200:11 design (2) 151:12 163:25 designed (2) 73:15 109:20 designer (1) 87:5 designers (2) 32:9 90:17 designs (2) 163:17,22 desired (2) 86:24 121:25 desires (1) 59:14 desktop (1) 176:6 desperate (2) 30:25 167:22 desperately (3) 21:18 74:5 142:18 despite (3) 156:23 173:25 174:10 detail (7) 21:9,11 22:12 47:13 86:10 107:19 206:25 detailed (3) 83:17 95:4 174:7 details (16) 20:1 22:1,4,10 41:25 42:2 44:18 45:8 48:25 75:6,8 77:2 80:13 107:16 151:12 205:2 determine (1) 89:4 detriment (1) 186:15 developed (1) 112:13 developers (1) 32:9 developing (2) 60:1 125:7 development (22) 2:10 30:6 41:6 53:13 59:1,4 60:6 87:7 89:20,25 90:9 111:22 124:20,25 138:24 140:25 149:14 152:12,16,23 196:12,15 developments (2) 64:21 175:6 devices (1) 4:17 diagram (8) 3:1 26:18 29:8,13,15 32:16 34:24 43:1 diary (2) 97:7 186:7 didn't (57) 15:6 20:21 21:4 25:12 26:6 29:13,21 30:22 35:15,19 38:12 41:4 46:9 48:7 56:18 57:10 65:23 68:24 71:4,14 72:25 78:3 86:24 90:20 98:17,21 104:17 105:24 108:22 120:23 121:24 122:5 123:13 125:18 132:5,9 144:24 147:23 148:4 161:18 162:8 166:7 167:10 170:24 172:18 175:19 178:7 181:8 185:11	193:23 195:5 197:7,17,18,18 199:25 203:15 died (2) 62:1,6 differ (1) 32:20 difference (5) 47:2 89:7 116:9 119:6 121:4 differences (5) 168:25 169:5,13 170:6,9 different (25) 38:6 56:21 61:18 62:14,16 88:3,4,4 91:2 97:23 98:11 100:15 108:5 119:12 127:23 129:15,18 133:16 142:18 147:22 156:20 169:16,25 170:5 171:3 differently (2) 207:16 208:2 difficult (6) 27:18 50:9 159:23 192:14 199:13 203:12 difficulty (2) 40:24 120:14 diligence (1) 90:18 dimensions (1) 154:22 direct (6) 4:18 15:5 26:8 85:24 90:5 121:5 direction (3) 17:24 65:12 162:23 directly (23) 10:17 26:3 35:23 39:4 43:14 73:22 74:23 87:15 101:14 109:17 116:12 119:11 122:3 129:3 138:11 140:3 148:3 165:16 170:13 175:19 177:17 179:18 184:24 director (6) 94:23 140:25 145:10,11 173:6 198:10 disagree (1) 86:12 disappear (1) 120:20 disappointed (1) 173:25 disciplinary (5) 182:10 186:2 187:3 189:10 206:24 disciplined (2) 190:15 191:2 disclosure (3) 19:7,11 162:3 discuss (9) 18:3 25:25 94:23 117:15 121:13 122:5 137:25 165:18 170:8 discussed (13) 35:24 52:17 82:5 92:18 97:8 100:4 106:5 120:2 126:23 156:9 169:13 170:12 185:22 discussing (5) 32:18 62:12 151:25 160:20 180:2 discussion (5) 56:10 97:4 114:5 125:8 142:4 discussions (8) 59:25 105:18 107:7 116:5 119:2 120:1 129:2 147:10 dismantle (2) 116:17 131:8 dismissed (1) 182:11	disseminate (1) 187:15 distributor (2) 164:12,15 divulged (1) 9:13 document (36) 2:24 3:6 4:12 7:8 22:14,17 23:11 24:11,12,13,14 25:2 26:18 27:15 28:2 30:11 34:22 35:1,4,9 39:15 41:15 52:8 71:24 86:6,20,23 88:16 93:23 95:9 110:16 155:9,11 172:4 176:3 182:2 documentation (4) 32:13 60:3 200:24 202:13 documents (9) 2:21 4:3 10:9 30:8 33:1 52:10 59:13 69:22 78:6 does (33) 10:14 13:19 14:15 17:4 27:16,23 28:1 32:20 42:15 45:3 47:1 58:17 61:18 66:15,16 108:12 114:18 123:11 124:9 129:14 134:9 135:22 155:10 158:19,22 159:16 161:1 169:4 171:7 173:20 175:23 193:10 195:14 doesn't (21) 27:16,21,23,24,25 28:13 29:1 38:2,12 51:20,22 95:24 108:12 125:3 135:22 136:7 150:23 166:3 171:6 176:5,22 doing (17) 12:20 13:18 15:10 24:20 38:18 74:4 80:3 99:23 102:23 116:23 127:21 161:19 186:18 189:19 192:15,22 202:1 done (22) 21:15,17 36:12 38:16 47:5,6,19 48:12 55:25 67:9,10 110:9 130:12 152:10 155:22 197:6,10,22 201:6 203:1,1 207:15 dont (56) 4:1 8:10 13:14 18:18 19:9 20:10 26:3 28:4 33:7,8 44:3 46:20 49:7,22 50:4 56:7,11,24 57:17 65:20 69:2 70:2 75:25 76:20 84:7,7 88:16 91:2 101:2,25 102:2 104:23 105:13 117:15 118:15 121:5,22 130:7,9 132:16 138:14 139:5 143:14 153:9 157:20 170:12 174:16 188:15 190:4,17 194:14 196:6 198:24 199:23 200:11 207:11 door (2) 15:6 108:16 double (3) 124:11 158:9,13 doubt (4) 22:19 165:12,17 183:5 down (38) 2:9 11:11 28:8 31:21 37:22	48:18 58:23 67:23 70:17 72:8,9,16 73:8 94:22 96:25 97:11,12,25 104:14,23 111:2 123:3 125:16 147:2 162:1 164:17,18 168:1,13 176:25 177:2 191:18,20 192:12 196:3 197:1,4 200:3 draft (13) 9:4,7,11,25 11:14 13:1 15:22,25 16:3 17:2 93:15 141:19 145:15 drafted (3) 11:13 103:2 145:15 drafting (1) 87:13 draw (1) 115:25 drawings (1) 154:21 drip (1) 85:2 driven (1) 155:6 driving (2) 112:6 190:24 drowning (1) 35:16 drug (6) 182:24 183:20 184:3,7,7 199:4 due (3) 60:10 90:18 123:24 dumped (1) 204:24 duration (5) 134:19 135:3 136:17,23 142:10 during (9) 19:7 94:17 102:25 172:11 182:19 191:14 203:22 204:4 207:3 duty (1) 190:24	103:21 132:23 169:13 170:5,8 172:1 205:16 elsewhere (2) 175:18 205:5 eludesic (1) 102:22 email (117) 7:6 8:22 9:1,2,19 11:5 12:22,25 13:1,7 15:20,24 16:5 17:15 31:9,11,13,17,18 34:19,20 36:7,17,18 39:7 44:9 46:5,25 50:19 53:1,2 54:8,14 60:22,25 62:12 64:18,23 65:7,18 67:23,25 78:16,18,19 79:8 86:2 87:1 91:21 92:3 93:5 95:3,10,12 96:16 102:10 105:1,7 106:5,7 113:10,12,13 114:8,16 115:13,18 117:9 118:19 121:7,14 122:5,24 123:3 126:10 127:11 129:4 130:14,20,21 132:19 133:14,15,17 137:4,9,17 140:17,24 142:25 143:8 146:22 153:19,20 154:2,10 155:4 156:4 157:23 160:13,15,20 162:19,22,25 163:4 166:9 171:17,18 177:23 183:6,8,8,10,25 185:20,21 emails (14) 5:19 10:20 37:3 43:21 44:4 52:18 66:6 96:11 105:13 122:10 124:2 178:7 185:16 188:21 embark (1) 103:1 embroiled (1) 202:19 emissions (1) 85:5 emotional (2) 193:11 198:15 emotionally (1) 197:23 employ (2) 131:10 132:19 employed (4) 131:5 132:13,16,24 employee (1) 184:1 employment (3) 182:11,16 198:8 en (1) 73:10 enable (1) 10:1 enclosed (3) 68:5 75:14 77:22 encountered (1) 78:1 encouraging (1) 143:5 end (29) 4:19 14:25 32:19 51:22 53:25 63:17 69:15 76:6 82:12 115:13 116:16 127:20 129:4,5 132:19 137:14 142:6 153:17 162:20 167:12 192:11 193:16 194:3 196:23 197:25 198:5 203:7 205:12,20 endorsement (2) 144:16 177:24 engage (1) 174:1	
D							
daily (1) 178:8 damaged (2) 116:18 195:20 damaging (1) 196:19 darent (1) 192:19 data (39) 8:8 30:2 37:12 66:18,25 67:5,19 68:5,21 73:1 75:14 77:22 82:3 85:20,24 87:24 90:2,5 97:16,22 98:17 109:4 115:16 116:18 117:6 130:7,8 131:3 134:4 135:6 138:15 139:15 143:25 144:6 148:5 154:18,24 156:1 172:18 date (13) 1:24 19:2 39:12 50:23 99:18 110:24 143:24 144:3,19 150:17 155:22 162:11 174:4 dated (12) 1:19 42:8 50:21 60:25 87:2 110:16 137:9 145:6 173:8,17,20 176:14 dates (4) 6:24 42:16 97:5 125:10 dave (4) 95:13 149:2 151:8,12 daves (1) 151:21 davies (5) 53:4 129:23 153:23 160:17 181:6 davis (2) 173:5,11 day (12) 4:19 13:5 14:11 16:5 44:21 76:6 117:7 138:4 153:17 193:16 197:25 198:5 day751661516 (1) 180:18 days (9) 39:5 101:7,20,22 148:14 183:12 196:20 207:15 208:13 dclg (7) 48:25 49:5,12,23 50:2,4,5 deal (3) 57:10 113:4 144:24	E						
ear (1) 100:23 earlier (10) 49:20 54:24 83:11 124:3 127:25 128:4 150:24 163:6 177:23 207:5 early (5) 95:19 136:18,24 137:1 173:22 easy (4) 16:10 115:1,8 208:11 ebury (1) 87:8 edited (1) 123:9 editing (1) 105:16 edition (8) 127:15,16 128:5,13 136:11,12,22 142:9 effect (6) 10:6 20:22 41:1 65:1 73:16 115:25 effectively (2) 139:1 199:23 effort (1) 145:16 efforts (1) 163:14 eg (2) 27:1 200:3 either (9) 33:24 53:25 73:13 107:21 156:9 166:11,25 168:5 171:22 elaine (2) 198:10 200:4 element (2) 32:5 123:6 elements (1) 55:16 elliott (2) 133:20 176:16 else (16) 18:14 19:10 21:18,21 26:6 62:18 63:13 100:12,25	ear (1) 100:23 earlier (10) 49:20 54:24 83:11 124:3 127:25 128:4 150:24 163:6 177:23 207:5 early (5) 95:19 136:18,24 137:1 173:22 easy (4) 16:10 115:1,8 208:11 ebury (1) 87:8 edited (1) 123:9 editing (1) 105:16 edition (8) 127:15,16 128:5,13 136:11,12,22 142:9 effect (6) 10:6 20:22 41:1 65:1 73:16 115:25 effectively (2) 139:1 199:23 effort (1) 145:16 efforts (1) 163:14 eg (2) 27:1 200:3 either (9) 33:24 53:25 73:13 107:21 156:9 166:11,25 168:5 171:22 elaine (2) 198:10 200:4 element (2) 32:5 123:6 elements (1) 55:16 elliott (2) 133:20 176:16 else (16) 18:14 19:10 21:18,21 26:6 62:18 63:13 100:12,25	ear (1) 100:23 earlier (10) 49:20 54:24 83:11 124:3 127:25 128:4 150:24 163:6 177:23 207:5 early (5) 95:19 136:18,24 137:1 173:22 easy (4) 16:10 115:1,8 208:11 ebury (1) 87:8 edited (1) 123:9 editing (1) 105:16 edition (8) 127:15,16 128:5,13 136:11,12,22 142:9 effect (6) 10:6 20:22 41:1 65:1 73:16 115:25 effectively (2) 139:1 199:23 effort (1) 145:16 efforts (1) 163:14 eg (2) 27:1 200:3 either (9) 33:24 53:25 73:13 107:21 156:9 166:11,25 168:5 171:22 elaine (2) 198:10 200:4 element (2) 32:5 123:6 elements (1) 55:16 elliott (2) 133:20 176:16 else (16) 18:14 19:10 21:18,21 26:6 62:18 63:13 100:12,25	ear (1) 100:23 earlier (10) 49:20 54:24 83:11 124:3 127:25 128:4 150:24 163:6 177:23 207:5 early (5) 95:19 136:18,24 137:1 173:22 easy (4) 16:10 115:1,8 208:11 ebury (1) 87:8 edited (1) 123:9 editing (1) 105:16 edition (8) 127:15,16 128:5,13 136:11,12,22 142:9 effect (6) 10:6 20:22 41:1 65:1 73:16 115:25 effectively (2) 139:1 199:23 effort (1) 145:16 efforts (1) 163:14 eg (2) 27:1 200:3 either (9) 33:24 53:25 73:13 107:21 156:9 166:11,25 168:5 171:22 elaine (2) 198:10 200:4 element (2) 32:5 123:6 elements (1) 55:16 elliott (2) 133:20 176:16 else (16) 18:14 19:10 21:18,21 26:6 62:18 63:13 100:12,25	ear (1) 100:23 earlier (10) 49:20 54:24 83:11 124:3 127:25 128:4 150:24 163:6 177:23 207:5 early (5) 95:19 136:18,24 137:1 173:22 easy (4) 16:10 115:1,8 208:11 ebury (1) 87:8 edited (1) 123:9 editing (1) 105:16 edition (8) 127:15,16 128:5,13 136:11,12,22 142:9 effect (6) 10:6 20:22 41:1 65:1 73:16 115:25 effectively (2) 139:1 199:23 effort (1) 145:16 efforts (1) 163:14 eg (2) 27:1 200:3 either (9) 33:24 53:25 73:13 107:21 156:9 166:11,25 168:5 171:22 elaine (2) 198:10 200:4 element (2) 32:5 123:6 elements (1) 55:16 elliott (2) 133:20 176:16 else (16) 18:14 19:10 21:18,21 26:6 62:18 63:13 100:12,25			

engineer (4) 63:15 74:10 174:1 205:4	191:2	138:9	fait (5) 11:20 18:5 33:8 122:1 207:7	70:4,10,11,14,19 71:10 73:16,20,24 74:10 75:16 79:5,15	167:10	164:11,12
engineering (5) 86:16 146:7 174:11 176:4,8	every (7) 16:21 70:20 83:4 87:25 88:24 202:22 204:25	explaining (3) 142:3,4 206:25	faith (2) 108:24 109:2	80:12 84:24 85:3 86:16 88:5 93:21	followed (3) 35:2 87:1 93:22	front (10) 6:23,24 7:23 8:3 20:24 68:20 117:5 135:21 173:16 186:12
engineers (8) 32:10 39:24 40:1 63:5,8,18 64:13 194:23	everybody (3) 130:18 181:11 199:20	explains (2) 32:2 47:1	falling (2) 59:5 190:23	100:18 110:10 111:14 114:2 120:3,5,7,17,25 121:1 129:12 130:2	following (15) 16:12 34:10 35:17 53:8 59:11,25 68:4 70:21 77:21 80:25 115:17 134:2 153:3 155:6 205:24	frontline (3) 88:9 106:11 157:20
england (2) 2:24 4:7	everyone (3) 1:3 184:13 208:3	explore (1) 129:17	familiar (1) 165:16	148:2,4 151:22 154:4,11,21 163:13,19 174:1,11 176:4,8	font (3) 16:25 17:22 103:7	fruition (2) 174:4,12
enormous (2) 31:6 183:3	everything (7) 55:25 68:6,10,16 104:5 127:21 202:25	exposed (2) 85:2 125:21	familiarised (1) 96:10	180:25 183:18 194:23,24 200:7 205:4	foot (1) 71:25	frustrating (2) 168:16 196:23
enough (7) 53:13 65:12 81:1 128:17 160:2 163:25 208:25	evicted (1) 183:20	exposure (1) 136:19	far (18) 12:6,17 17:21 30:14,16 33:3 48:2 54:16 66:14 72:6 75:21 95:15 115:1,8 124:23 125:23 170:20 204:11	fireload (1) 136:19	footage (2) 126:25 134:5	ftt (3) 129:10,11 130:4
enquiries (9) 35:16 62:1,6 66:3 90:13 95:12 157:22 194:19 204:24	evidence (48) 1:5 5:16 7:20 14:22 35:22,23 55:23 57:18 62:3 63:2,3,19,20 64:5 81:8 82:3 97:1,12,13,14 99:24,25 107:18 117:15 118:4 131:24,25 135:5 136:2 140:8 145:1 153:18 173:21,22 174:5,19 175:1,5,8,13,13 176:1 179:7 180:2 194:21 206:11 208:9,15	express (1) 207:2	fault (2) 78:4 197:6	firm (2) 78:21 134:8	footprint (1) 104:4	full (26) 5:19,22 21:11 27:19 32:7 53:14 76:18 81:3 85:15 125:1,2 131:1,3 134:4,12,19,22,24 135:2 136:4,17,19,22,24 142:10 175:18
enquiring (2) 71:17 126:13	evicting (1) 72:4	extend (3) 48:12 103:9 115:23	fears (1) 208:1	first (41) 1:18,24 7:14 9:5 13:12 16:2,8,21 22:20 39:7,10 42:7 44:6 52:20,21 58:14 69:15 86:5 88:11,12,12 89:14 100:7,13 106:14 131:15 134:7 145:5,19,19 147:5 150:22 153:21 164:6 165:9,13 183:23 189:14,14 194:3 206:24	form (4) 51:5 68:15 144:22 175:22	fully (5) 13:9 131:11 132:20 141:14 173:21
ensure (3) 112:11 131:10 132:20	ewart (2) 185:17 188:25	extended (2) 63:12 146:2	feasible (1) 88:22	firstly (3) 144:9 186:15 207:18	forma (1) 77:10	fun (1) 192:17
ensuring (2) 115:2,9	ex (1) 80:9	extending (4) 149:1 151:7 152:2,3	february (10) 97:6 102:11 106:7,8 173:9 176:14 177:5 178:14 188:25 190:16	fit (6) 4:17 89:19,24 90:8 107:10 146:5	formal (3) 89:23 137:16,23	functioning (1) 184:9
entire (1) 158:16	exactly (4) 3:21 16:9 30:18 121:22	extension (2) 42:13 143:10	feedback (3) 103:12 127:14 165:10	fitted (2) 107:17 108:11	formally (2) 135:10 186:1	fundamental (3) 34:17,18 40:22
entirely (2) 86:20 174:9	excellent (1) 134:24	extinguished (1) 47:10	feel (8) 14:1 95:23 98:24 106:19 141:12 143:3 175:19 186:21	fitforpurpose (1) 92:4	format (2) 58:18 82:2	fundamentally (2) 25:16 71:11
enuff (1) 81:11	evolve (1) 138:22	extra (1) 154:22	feeling (2) 114:1,2	five (1) 154:5	formulafacer (1) 111:7	further (26) 15:18 40:15 53:11 68:8 69:18 72:8 73:8 85:10 96:20 103:1 107:6 130:20 133:25 137:25 148:5,15,21 149:11 154:23 162:13 163:6,13 170:21 172:17 178:24 207:16
environment (1) 183:17	evolving (1) 72:4	extra (1) 154:22	felt (9) 65:12 131:21 135:19 142:25 143:1,7 182:6 190:11 195:15	fixed (2) 75:13 83:7	formulation (4) 112:12 168:8 170:6 179:17	furthest (1) 90:25
environmentally (1) 119:18	exact (4) 43:2 62:20,21 125:19	extreme (1) 198:16	fence (1) 132:7	fixings (1) 104:5	forthcoming (2) 102:22 175:13	future (3) 35:5 118:23 151:12
errors (1) 52:13	example (2) 119:19 142:7	extremely (1) 208:14	fenwick (2) 133:20 176:16	flame (3) 23:23 134:25 180:24	fortunately (2) 81:12 82:11	G
escalate (1) 95:18	examples (2) 40:9 91:15	eye (1) 170:3	few (6) 65:19 83:1 85:4 101:22 106:4 122:9	flames (2) 113:8 128:13	forward (10) 36:6 41:24 54:11 71:25 79:15 94:24 96:3 152:16 161:17 190:21	g (1) 19:19
escalated (1) 172:11	exceeding (1) 107:12	eyes (1) 196:1	fewer (1) 62:10	flaming (3) 123:24 134:23 135:21	forwarded (3) 10:24 162:24,25	gaining (1) 146:1
essence (1) 68:1	excel (1) 204:25		fibres (1) 207:22	flammability (2) 120:14 165:20	found (6) 48:1 138:20 152:14 181:6 182:2 206:21	gale (2) 198:10 200:4
essential (1) 163:23	exceptionally (2) 190:1,9		fifth (1) 118:25	flamabilitycalorific (3) 116:10 119:7 129:15	four (8) 23:15 39:5 72:16 88:12 163:18 170:11 188:11 198:23	garbage (1) 46:9 11:9,13,22 13:4 15:22,25 16:6 34:21 35:11 36:4,8,10 37:1 39:9 43:19 66:10,13 67:5 81:22
essentially (1) 170:3	excess (2) 53:12 96:1		figure (1) 82:18	flexible (7) 149:3,8 151:10,14,18,19,22	fourth (6) 23:9 41:12 142:7 164:16 196:25 197:4	gas (1) 181:21
establish (2) 16:16 127:3	excessive (1) 198:25		fill (1) 149:4	floated (1) 20:23	fr (10) 68:4,21 73:20,24 75:12 76:21 84:10 85:22 111:15 149:25	gave (2) 35:19 207:1
et (5) 88:5 132:8 199:6 205:2 207:2	exchange (1) 106:4		filled (1) 60:5	floor (7) 6:8 16:20,21,22 70:20 75:17 176:20	frame (22) 7:17 8:7,9,19 27:1 47:8 51:16 63:1 64:9 65:17 75:14 76:17 78:2 85:23 98:5,18 107:23 108:2,17 118:10 149:4 152:9	gene (1) 173:6
etc (1) 53:24	exchanges (2) 10:12 133:4		filler (1) 3:12	flow (1) 172:7	framed (6) 47:23 48:6,10 51:23 65:10 90:4	general (1) 173:6
eternit (1) 55:19	executive (1) 173:7		final (9) 15:22,25 75:19 85:14 88:20 133:10 143:19 178:9 207:13	flyer (1) 80:10	frames (4) 64:25 152:4,5,7	general (2) 118:12,17
ethos (1) 152:22	existed (1) 85:20		finally (2) 130:3 163:14	flyssic (1) 195:10	framework (2) 146:4,6	generality (1) 19:25
euro (1) 25:7	existing (2) 8:19 104:21		financial (2) 178:21 179:2	foam (9) 21:13 58:10 145:21,22,23 155:10 157:9 170:4 200:16	frank (1) 97:19	generally (2) 148:1 190:1
euroclass (1) 74:1	exnova (5) 116:8 119:6 120:13,16 195:2		financially (2) 88:22 165:8	foamed (1) 85:4	free (1) 208:19	generic (7) 31:12 80:6 86:10 89:1 107:4 143:23 144:23
euroclassifications (1) 73:24	expand (2) 73:4 167:20		find (8) 31:25 63:5,15 65:8 115:2,9 142:18 194:23	focus (8) 43:23 53:6,19,21 54:9 58:9 120:3 196:12	friday (3) 11:7 16:4 34:21	george (1) 11:20
europaean (2) 73:11 126:3	expanded (1) 104:4		finding (1) 109:16	foam (9) 21:13 58:10 145:21,22,23 155:10 157:9 170:4 200:16	friendly (3) 119:18	get (74) 10:25 11:10,18,24 12:9 17:8,16 18:6 25:8 26:9 35:5,14 37:11 39:4,11 40:14 48:21 61:16 62:3 63:12,14 67:17 76:13 80:25 81:2 87:15 97:6 99:20 100:12 105:9 106:23 107:1 112:7 113:5 115:2,10 116:6,8,15 119:3,5,24 120:13,21
evade (1) 204:11	expanding (2) 63:19,21		fine (3) 48:23 154:14 188:19	follow (3) 38:11 41:4		
evans (7) 36:5 95:12 100:9 106:9 140:18 145:6 155:1	expansion (1) 167:18		finish (3) 148:25 172:8 193:5			
even (16) 12:18 13:14,17 21:8 26:10 34:14 41:20 42:15 63:25 71:12 91:12 92:9 97:23 152:7 165:22 166:1	expect (1) 77:22		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
event (6) 85:8 93:10 131:4 132:12 138:15 148:13	expecting (2) 135:25,25		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
eventually (3) 8:10 82:2 144:15	expenditure (1) 117:2		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
ever (37) 8:6 12:7 18:3,13,17 19:6,10 20:4,12 41:3 49:12 50:1,13 56:6,9 57:2 62:18 63:15 64:13 69:2 84:14 122:4,7 123:16 128:24 129:1 130:7,8 132:23 153:7 155:12 156:9 165:18 169:9 180:22 185:1	expenses (4) 185:19 186:4,13,17		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
	expensive (1) 39:1		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
	experience (2) 11:9 75:25		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
	experienced (1) 60:12		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
	experiencing (2) 187:9,19		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
	expertise (2) 174:1,11		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
	experts (2) 4:16 29:24		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
	expiry (1) 50:23		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
	explain (2) 11:17 142:16		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			
	explained (2) 100:10		fire (100) 2:8,8,11,18 16:20 18:16 20:5,13 21:1,1,15 23:10,12,17 26:14 32:14 34:17 38:14 40:1 42:19,21 47:9 51:5 52:22,23 53:6,11,24 54:9 58:9,25 59:2,10,19 60:5,15 63:5,8,15,18 64:8,11 67:13,19 68:5 69:23,25			

121:14 122:4,6	117:10,18 129:16	having (22) 10:4 15:9	74:4,24 75:3 76:4	171:2 183:20 184:3	40:13 41:9 54:20 89:4	119:7 127:14 137:24
125:11,14,14	168:20 172:6 179:23	18:17 24:17 30:14	88:11 90:21 92:10	household (1) 84:1	94:19 121:2 204:8	initially (3) 140:22
127:22,24 128:3	184:24 188:9	32:4 49:22 65:10	94:4 95:16 103:4	housing (1) 32:4	impossible (1) 193:20	163:10 201:10
129:24 130:8 131:4	189:18,19 192:15,23	83:11 85:3 87:9 96:23	104:25 105:6 112:15	howard (4) 126:14,19	impressed (1) 189:4	initials (1) 103:10
132:12 154:19,23	198:1	105:18 146:24 163:10	122:25 124:17 135:19	impression (3) 10:16	impression (3) 10:16	injunct (1) 176:18
155:19 160:25 164:12	government (1) 49:6	174:20 175:12 177:10	142:15 175:14 193:14	however (23) 13:11	14:12 143:4	injunction (1) 177:7
165:23 167:20 170:17	graham (2) 95:13 100:9	192:5 193:6 199:13	194:2 199:1 200:21	40:17 48:25 51:10	improve (1) 130:19	input (1) 87:9
174:11 178:7 180:22	grange (40) 1:14,16 8:6	207:1	201:18 202:1,11 203:4	59:4 62:2 66:14 73:23	improved (5) 38:20	inquiry (5) 1:15 160:5
186:3 189:12 190:15	45:16,20 57:12,22	head (5) 21:17 96:9,21	208:9	75:18 80:20 85:15	54:12 125:13 157:10	162:2 205:24 210:5
196:10 206:6 207:9	58:5,6 117:8,12,19	116:22 193:13	hereford (1) 46:9	88:25 93:14 103:18	182:5	inroad (1) 6:17
getout (3) 13:15 14:25	118:1,2 170:17,18	headache (3) 36:23	herefordshire (1) 96:22	110:9 129:6	improvements (1)	inserted (1) 69:21
15:4	171:17 172:5,8,11	105:25 106:2	hes (32) 33:16,17 44:18	141:9,12,15 144:8	169:19	inside (1) 81:4
gets (1) 81:7	179:22 180:13,14	headed (4) 26:13 36:9	47:19 55:12,13,16,21	163:19 169:4 170:12	improving (1) 125:8	insofar (1) 17:7
getting (19) 14:12	185:15 188:18,19	110:22 173:9	66:24 88:16 103:8	hr (1) 185:18	inaccurate (4) 43:6	inspector (1) 174:25
22:18 31:21 62:10	205:12,15,18	heading (6) 23:10 42:19	105:14,16,16,16	human (1) 198:10	78:14 150:19 151:2	installation (1) 164:12
65:2 90:18 99:1,6	206:3,13,15,21,22,23	59:23 110:24 114:16	116:24 121:19 122:25	hundreds (3) 90:12	inadvertent (1) 71:20	installed (4) 53:10
102:16 105:1 139:7	208:5,23,24 209:1,7	162:21	132:19 133:18 134:3	96:13 205:9	inbox (2) 178:7 188:21	104:18 107:10,12
175:14 193:17,18	granted (1) 22:23	headings (1) 2:9	160:6 167:3,4 171:4	hurd (1) 78:24	include (2) 148:24	installers (1) 93:13
196:23 203:11,25	grateful (1) 208:16	heads (3) 13:14 203:22	174:9,9,16		169:4	instead (1) 47:23
204:22 206:3	great (3) 31:23 55:20	204:4	175:23,23,24 190:7		included (5) 49:19	instruction (1) 190:25
give (17) 6:16 13:15	131:23	health (2) 182:24	hesitation (1) 44:17	I	51:10 143:8 151:20	instructions (2)
21:11,22 22:11 86:9	green (1) 132:6	199:19	hi (5) 36:11,20 44:24		166:13	177:19,21
102:20 113:25 120:16	grossenor (5) 66:7 68:2	hear (1) 208:14	96:19 123:4	ian (2) 173:5,11	including (9) 19:25	insulant (3) 7:17 68:20
132:6 143:15,24	83:12 86:4 87:7	heard (1) 45:4	hid (1) 56:4	ice (1) 64:20	26:19 31:14 81:4	149:8
147:16 189:7,9 202:16	ground (4) 3:12 6:9	hearing (8) 1:4,4 96:3	high (13) 35:3 61:25	id (12) 3:8 14:1 26:9	127:12 135:16 140:18	insulants (1) 51:7
208:9	16:20 26:20	182:18 183:13	75:12 83:25 85:1,13	65:24 67:3 72:5 82:20	151:13 185:23	insulation (53) 3:12
given (23) 16:24 17:14	group (9) 53:6,21 54:9	198:7,21 209:9	96:2 102:14 104:1,8	100:23 125:7 154:12	inclusion (3) 120:10	8:17,18 20:22 25:14
27:14 31:1 41:3 44:18	58:9,14,20 59:9 120:3	hearings (1) 182:10	155:7 203:10 204:9	149:7 151:10	149:7 151:10	26:21 28:10,20,24
53:19 54:5 61:8 66:24	130:23	heat (1) 38:25	higher (1) 114:20	ideally (1) 114:20	incoherent (1) 29:8	32:23 44:12 47:10
90:9 91:17 93:8 95:22	grown (1) 53:21	heath (19) 31:9,11	highlight (5) 32:12	ideas (1) 128:10	incorporated (1) 16:18	64:5 70:3,18 72:11,18
96:5 100:2 146:4	guidance (11) 30:2 35:1	33:13 52:22 56:6,18	33:17,18 85:11 204:14	identification (1)	incorporating (1) 48:11	75:13,15 83:24
148:16 154:22 155:22	50:6 70:21 88:18	57:3 58:22 61:1,2	highlighted (5) 33:16	147:13	incorrect (2) 4:23	84:24,25 87:4 88:23
177:19 178:12,24	126:3 155:3 172:19	64:19,22 66:10 81:23	106:17 108:4 131:19	identified (1) 73:17	113:16	89:18 94:20 98:1,9,13
giving (3) 143:3 177:21	175:2 176:1,22	82:6 87:2 88:20 202:6	155:8	identify (3) 112:10	increase (1) 116:2	99:22,22 102:25 104:2
197:7	guys (1) 116:24	203:9	highlighting (3) 23:7	143:21 162:13	increasingly (2) 102:16	107:19 108:9 110:22
glazing (1) 39:24	gwyn (3) 129:23 153:23	heaths (1) 65:5	74:9 107:25	identifying (2) 74:16	105:1	129:6,7 130:10 135:24
global (1) 137:11	160:17	heavyhanded (1) 179:14	highly (1) 198:15	118:22	indefensible (1) 133:6	136:6 148:9,24 149:3
gm (2) 35:10 36:25	H	hed (3) 122:12,12	highpressure (4) 109:9	ie (7) 69:24 70:11 75:11	independent (1) 153:15	151:10,14,23 152:5
goal (3) 8:9 75:3 91:11	habit (3) 184:3,7,7	151:11	111:14 150:1 161:23	77:8 128:5,25 146:18	index (3) 38:19 119:4	159:6,10 160:20 192:3
goals (1) 194:9	hadnt (8) 77:25 78:12	hedges (1) 146:24	highrise (15) 22:18	illegal (2) 13:19 15:10	210:1	204:10
goes (4) 60:4 131:9	127:17 128:16,21	height (9) 45:9 81:3,3	35:14 40:23 41:2,10	illustrated (1) 54:23	indicate (1) 92:3	insulationfire (1) 135:1
168:23 173:18	150:20 152:7 199:13	128:17 18,22,23,25	67:18 103:11,13	illustration (1) 118:17	indication (1) 41:3	insulations (4) 69:23
going (77) 1:4 4:21 6:1	half (3) 148:12 153:21	134:24	104:7,9 156:11 203:25	illustrative (1) 122:10	indications (1) 134:8	70:10 84:5,15
12:6,18 13:13 16:8	172:12	held (4) 154:16 165:9	204:20,24 205:9	im (51) 12:6 13:9 14:14	indicative (1) 125:3	insurance (3) 24:11
17:10 24:11 29:9 35:8	halfway (3) 67:23 72:9	188:24 199:1	highup (3) 99:2 100:6,7	19:12 26:4 28:6 31:19	individual (1) 45:17	94:14 174:24
37:8 38:20 39:3,17	171:2	hello (3) 95:14 133:24	hijacked (1) 54:13	33:7 35:8 36:4 41:22	individually (1) 88:7	insurers (1) 50:3
40:10,12 45:14 46:6	hall (1) 101:10	137:20	himself (1) 93:10	62:16 64:23,25 67:25	individuals (1) 31:14	integrity (4) 192:15,23
52:16 56:6 57:3 58:23	handled (2) 199:22,22	help (31) 3:25 4:3 6:20	hint (1) 183:19	72:14 74:4 80:3 83:14	industrial (1) 32:5	195:20 196:19
60:20 64:10 67:7,25	handwritten (1) 191:11	7:8 36:2 39:21 43:12	hobbs (3) 129:23	94:5 96:9,14 102:16	industry (7) 15:5 39:24	intend (3) 102:25 135:9
75:24 78:17 82:22	hang (1) 72:14	52:2 85:7 95:15 99:14	153:23 160:17	104:7 105:1 109:16	50:3 55:1 148:14	137:15
83:18 87:25 88:7	happen (4) 48:20	103:24 110:14 111:21	hobby (1) 199:10	110:13 111:10 112:25	200:24 202:12	intended (3) 89:19
94:5,24 97:17 99:18	120:16 160:11 184:21	112:15 115:11 119:8	hold (4) 28:16 96:24	116:17,21 119:24	inert (1) 73:15	139:17 141:7
110:12 115:14 117:6	happened (8) 43:12	120:15 124:5 138:18	116:15 196:10	138:7 142:3,3 145:18	inevitably (1) 39:17	intending (1) 135:17
121:3 125:2 127:8	87:12 99:15 103:2	151:9 158:22 164:9,11	holder (2) 6:10 22:24	149:19 150:7,8 165:16	inferred (2) 200:24	intention (1) 87:20
128:7 132:19 138:18	114:6 117:4 138:4	170:17,21 184:23	holes (1) 166:8	170:16,20 171:1	202:14	intentionally (1) 75:2
141:16 142:12,21	142:3	186:22 192:18 201:12	holiday (2) 197:9,18	177:14,18 184:8	influence (5) 89:5	interest (1) 117:3
143:1 150:17	happening (5) 32:7	208:15	holistically (1) 5:11	187:17,24 192:2	115:23 131:3,16,17	interested (1) 99:23
152:13,16 155:15	52:14 155:16 168:1	helpdesk (1) 61:5	homes (1) 94:14	197:23 206:3	influences (1) 163:24	interests (1) 17:21
157:12 160:10,21	191:16	helped (2) 87:11 112:24	honest (11) 101:24	image (6) 7:25 8:3,7,14	information (44) 4:14	intermediate (2) 70:20
161:15,16 165:24	happens (1) 173:4	helpful (2) 196:24	110:13 112:17 121:6	118:9,14	9:13 19:15,23 20:17	75:17
168:1 169:7 170:4,5	happily (1) 99:21	205:18	130:7 132:17 138:11	imagine (1) 193:12	21:8,9 28:3 40:5,13	internal (4) 44:8 97:18
172:3,7 176:19	happy (11) 17:10 30:19	helping (2) 187:14	157:20 173:2 186:20	immediately (8) 8:13	63:10 64:24 65:24	98:13 100:20
178:17,18 179:25	55:6 99:8,10	188:6	203:14	19:13,21 33:24 47:20	68:23,25 69:4 70:21	internally (2) 65:21
185:7 194:11 199:6,21	105:10,17 121:19	hence (3) 49:1 66:16	hopeful (1) 128:8	94:22 134:18 187:5	72:3 80:1,25 85:12,15	127:11
200:21 201:19 202:11	133:8 153:14 204:13	81:7	hopefully (3) 74:10 81:1	immoral (2) 13:18 15:10	87:16 88:15 94:23	interpret (1) 135:7
gone (11) 20:19 21:10	hard (3) 12:9 109:16	hepworth (7) 66:9	116:18	impact (2) 163:8 169:2	99:17 100:10,20,24	interpretation (6)
30:14 63:6 91:1	184:10	67:22 86:1 87:5	hoping (4) 21:18,19,21	impeded (1) 114:22	103:16,19 104:17	134:15 137:22 138:9
104:14 125:16 176:17	harm (1) 179:1	91:24,25 109:22	80:18	implies (2) 114:11	108:24 120:17 125:18	142:14 148:22 155:7
207:14 208:1,9	hat (1) 199:1	here (43) 4:22 6:6 26:2	horizontal (3) 70:19	132:19	144:9,21 156:15	interpreted (1) 135:8
good (25)	hate (1) 86:14	27:23 29:8 31:10	107:11 163:19	implying (1) 4:23	162:10 166:8 167:20	interrupt (2) 172:7
1:3,9,10,13,17 16:9	hats (3) 158:7,22,23	33:15 34:17 38:11	hour (2) 134:19,22	importance (3) 40:22	194:25 205:1,5	187:17
54:1 57:13,15 62:3	havent (5) 55:22 57:4	41:19,22 54:20 60:13	hours (1) 10:8	102:14 185:25	informed (1) 148:17	into (23) 4:1 6:17 7:2
108:24 109:2	96:10 175:13 176:3	61:18 63:4 68:23	house (5) 94:9 125:2	important (12) 4:24	initial (5) 30:10 116:9	17:21,22 18:23 25:1

41:2 44:7 65:22 69:22	34:10,12 36:9 39:6	joke (1) 185:4	181:13 182:5 183:2,4	kin00008697 (1) 189:13	65:16,17 66:3 67:12	188:9,9 190:17
87:9 97:20 125:18	40:13,21 41:16	joked (1) 199:5	188:4 191:4	kin000086973 (1)	68:13,14 69:2,7 70:18	193:12,19 194:20
126:4,5 138:22 170:11	42:1,14,15 44:22	joy (1) 17:9	192:1,2,24 193:2	189:23	71:21 72:11,18 75:15	196:6,10,18 197:6,6
173:2 200:22 201:19	46:9,14 47:12,13	juggle (1) 10:21	194:8,14 197:7,17	kin00008700 (1) 185:15	76:20 77:11 78:20,20	199:23,24 205:3,4
202:11 204:24	48:20,23 50:23 51:21	july (18) 78:25 113:1	201:4 203:25 205:9	kin00008841 (1) 153:19	79:10 81:16 82:14	206:14 208:9
intranet (1) 52:9	54:21,21 58:15	130:12 143:9	207:1,7	kin00008845 (1) 58:8	83:3,24 84:25 87:4	knowing (4) 82:25
intrinsic (1) 12:13	61:1,2,2,13,20,21	149:14,22 150:4	k15s (2) 93:21 99:25	kin00009135 (1) 60:22	88:23 89:18 90:8,10	156:23 161:14 208:13
introduced (2) 73:23	64:11,20 65:3 67:24	152:10 157:1,2,24	k5 (1) 193:6	kin00009353 (1) 8:24	91:13 93:3,14	knowingly (1) 93:20
84:8	72:8,23 74:22 76:25	158:5 159:6 160:22	keeley (4) 44:22	kin000093531 (1) 11:6	94:2,17,20 95:3,11	knowledge (4) 75:24
introducing (2) 81:6	78:9,14 79:19 81:15	166:24 174:14 183:7	45:15,22 46:8	kin000093532 (1) 9:20	98:4 100:25 101:14	131:18 144:2 183:15
120:19	87:4,4,6 90:7	185:16	keep (15) 82:21 93:13	kin000093535 (1) 9:2	102:5,25 103:18,25	known (3) 184:6 199:3
introductory (1) 107:6	91:3,15,16 95:2,11	june (9) 34:20,22 38:16	99:6,8 106:22 109:3	kin00009643 (1) 91:21	107:19 108:9 109:18	207:19
invite (1) 96:21	98:12 101:7 103:7	140:23 143:10,15	111:13 112:3 115:14	kin00009682 (1) 93:5	110:3 111:6 112:7,21	kooltherm (28) 8:16
inviting (1) 20:9	104:1 107:24 109:9	155:4 176:6,7	143:5 148:17 161:6,10	kin00010461 (1) 133:16	119:21 120:19 122:18	23:1 53:19,22
involve (1) 67:16	110:16,22,24 113:6,19	justifiable (1) 178:22	176:12 194:11	kin00021095 (1) 118:19	123:22 124:23 125:20	59:2,11,23 72:12,18
involved (24) 43:14,17	115:15 118:14,17	justification (2) 21:22	kept (8) 30:3 47:6	kin000210951 (2)	126:16 127:12 133:2,5	75:9 80:5 83:24 89:6
52:6 66:5 67:17 68:17	120:17 121:8 122:19	178:13	180:21 195:20 196:3,5	114:15 121:9	135:19 139:13,23	103:11 107:9,17
79:22 82:6 102:17	123:2 128:12 133:15	justified (1) 179:9	203:22 204:4	kin000210952 (4)	140:20 142:22 143:21	108:9,10 118:12 144:4
104:11 105:2 122:3	136:4,6 137:4	justify (2) 37:20 183:3	kesteren (1) 180:19	113:19 114:9 115:19	144:5,16,17,22	145:21 148:2,10 154:4
125:21 130:18 147:14	139:3,8,17,18 140:2	justin (3) 53:4 181:6	key (8) 2:7 54:10 94:6	118:21	145:2,12 146:3 148:9	157:13 173:10 192:2
155:1,4 164:21,24	142:5 144:14 145:22	182:2	99:7 110:3 154:3,9,10	kin000210953 (2)	152:14,23 153:12	193:1
171:2 177:11,17,22	146:13,17,17 148:3		keynes (1) 99:13	113:20,25	154:19 155:21	
208:3	150:19,19		kicked (1) 37:8	kin00021810 (1) 162:20	156:3,14 157:16	
involvement (5) 98:12	152:3,4,4,24 155:17		kickoff (1) 58:18	kin000219042 (1)	158:5,6 159:5,6 164:9	lab (2) 116:4 165:21
110:2 135:23 146:2	158:5,9,12,13,16,18,19	k (1) 193:4	kin00002163 (1) 106:6	160:14	165:3,13,23 166:6	labc (51) 13:25
147:5	159:17 163:8 166:23	k15 (213) 3:4,17 5:22	kin000021815 (1) 147:1	kin000219043 (1)	168:1 169:12 170:6	22:1,4,9,12 31:4
isnt (69) 12:16,19 25:6	168:3 169:7	8:4,16 9:5 11:3 12:18	kin000021816 (1)	160:19	172:17,20 173:7,12,22	32:2,6,24 33:1,23
27:6 28:19,22 29:9,15	170:3,4,5,5 171:15,18	19:8 20:6,10,14 21:3	146:22	kin0000219052 (1)	174:1,19 175:14	35:1,4,9
33:3 34:17 37:20	173:9 176:13,14,14,15	22:2,18,21 23:1,14	kin000021861 (3)	113:11	177:21,22 179:9,19	36:2,9,16,21,25 37:11
38:17 41:21 43:6	177:6 179:4 181:4	24:2 25:12,21 26:16	145:5,18 147:19	kin000219053 (1)	181:4,15 182:11,19,23	38:23 39:10,12,12,15
47:15 48:5 52:24	182:16 183:11 185:8	29:9 31:1,5 32:1,14,23	kin000021862 (3)	113:14	183:3,7,9,16	41:1,10,14,20 42:2
72:23 73:2 75:21	188:19	34:1 35:2,14,16,21	145:3,9 148:18	kin000219071 (1)	184:1,6,18 185:18	43:3 45:6 46:9,11,17
76:22 81:15 83:7	190:17,18,18,23	36:2,22,25	kin00002589 (1) 83:14	130:21	189:7 195:6	47:13,19 50:11,12
89:25 90:7,14 91:13	191:19 198:24 202:17	37:11,20,24 38:1,13	kin000025891 (1) 86:3	kin000219072 (1)	198:8,10,24 200:15	52:4,20 53:7,9 54:7
95:2,6 101:7,10	208:9,13	39:10,12 40:7 41:2	kin000025893 (1) 83:18	127:10	202:18 203:13	56:2 59:12 60:2
113:6,19 118:14	itself (1) 16:25	42:1,24 44:11,12	kin000025894 (3) 77:23	kin000219073 (1)	204:10,12 205:7 209:1	62:2,7,8 107:18
124:15 128:12 134:14	ive (11) 16:4 24:4,11	48:11 49:13 50:9 51:2	83:15,21	126:11	kingspans (19) 5:12	labc0000997 (1) 50:20
137:2	58:16 70:5 91:15,20	52:23 53:10,20	kin0000259 (1) 66:6	kin00021945 (1) 110:16	15:6 17:20 20:16 40:4	labc00009973 (1) 51:4
139:3,8,17,19,24	96:9 112:19 126:18	54:24,25 56:8 57:5	kin00002593 (1) 67:24	kin0002194517 (3)	47:25 82:15 91:7	label (3) 161:1,5 162:10
143:11 144:14,17	205:12	59:11,12,23 60:14,20	kin00002594 (2) 66:8	110:23 124:5 158:4	92:3,22 93:1,20 98:6	labelled (2) 160:25
146:17 147:25 150:18	iveits (1) 199:2	61:25 62:25 63:8	87:3	kin0002231239 (1) 22:6	109:25 133:12 146:4	161:12
152:25 167:1	ivor (12) 1:8 66:18	64:1,24 66:11,15,17	kin000025942 (1) 89:15	kin0002231242 (1)	156:8 176:15 200:6	labels (2) 162:13,16
171:12,13,15,17	86:12 93:15 121:11	68:2 69:8 70:19	kin00003701 (1) 64:18	29:20	kit (3) 53:14,23 144:1	laboratories (1) 165:21
172:12 174:9	123:4 126:22 184:20	71:10,12,13 72:12,19	kin00005308 (1) 78:18	kin0002231246 (1) 94:9	k15 (3) 79:18 80:5,12	laboratory (2) 126:5
179:14,21 181:4	185:22 187:2 207:9	73:16 75:9,13,22	kin000053082 (1) 79:22	kin0002231258 (1)	knew (23) 5:19,22 8:7	196:20
182:16,20	210:3	77:3,20 78:1,10,12,22	kin000053084 (2) 78:23	157:6	25:12 30:18,21,22	lack (2) 105:20 146:8
190:19,23,25 196:16		79:13 80:22,23 81:5	79:9	kin00022322 (1) 191:11	41:8,9 55:20,24 63:25	lacking (1) 163:18
201:9 202:17,23		83:24 85:21 89:23	kin000053085 (1) 79:3	kin0002232210 (1)	64:1,2 71:11 87:24	ladder (1) 201:24
iso (1) 170:10		90:3 91:23	kin00005382 (1) 53:2	192:10	122:15 125:7 138:16	lambda (3) 160:6,9
isolation (1) 20:22	jane (4) 44:22 45:15,22	92:4,11,16,23 94:21	kin00005383 (1) 31:10	kin0002232214 (1)	165:19 166:5,7,8	166:13
issued (7) 15:19 41:25	46:8	95:5,24 100:15 101:15	kin00005385 (1) 34:19	194:1	know (92) 5:6 7:22	lambie (6) 78:20
42:7,15 43:15 52:20	january (32) 9:21 10:4	102:6,17 103:11	kin00005552 (1) 36:6	kin0002232215 (1)	11:22 26:8,9 41:6	79:2,8,10,23 87:19
130:25	11:7 12:24 13:4,6	104:10,11,20 105:2,21	kin00005554 (1) 39:6	195:8	45:15 46:9 49:10	laminare (5) 109:9
issues (21) 14:16 36:23	76:21 97:5 99:13	106:6,12,16	kin000055542 (1) 39:8	kin0002232217 (1)	55:17 56:11,17	111:15 150:1 158:18
39:17 58:20 77:19	101:8,12 109:8,12	107:9,17,20 108:9	kin00005572 (1) 12:23	197:3	57:8,10 58:14	161:23
78:1 111:11 135:19	111:2,4	110:4,5,7 111:7,17	kin000055724 (1) 13:2	kin0002232229 (1)	61:14,18 62:1 64:3	lamination (1) 120:4
154:4,11 159:25	113:6,11,12,21	116:5 118:12,13	kin00005705 (1) 22:22	191:13	65:13,14 71:22	landlord (2) 183:9 185:8
186:11,25 187:13,23	114:6,9,10,15 121:9	119:2,8 120:2,9 121:2	kin000057054 (1) 23:9	kin000223573 (1) 159:5	76:3,20 82:20 83:10	language (3) 11:23
188:3 189:12 193:8	123:2 149:21,23	123:22 124:1 125:4	kin000057055 (1) 26:12	kin00022559 (1) 186:24	84:7,7 87:24 88:7	17:18 30:24
203:10,25 204:22	150:4,24 161:23 162:5	129:18 130:2,11,19	kin00005870 (1) 15:19	kind (12) 27:20 54:13	92:11,15 94:16 96:6	lantac (1) 59:12
issuing (1) 43:17	job (20) 61:15,20,25	138:17,18,21 139:18	kin000058941 (1)	55:18 56:3 88:8,9	97:19 99:12 101:2,23	lapse (1) 37:13
item (1) 59:22	74:10 80:2,21,21 81:1	140:2,20 142:19	102:10	107:5 111:22 147:16	105:23,25 106:20	lapsed (4) 36:15
items (2) 88:13 186:6	83:4 86:9,11,11,22	143:6,15 144:5,18,23	kin00008283 (1) 176:14	186:22 188:8 193:14	108:20 112:13,19	37:7,18 41:21
its (174) 1:22 2:6,7 3:6	154:17 186:18,19,19	145:21 148:4 153:25	kin000082833 (1)	kingspan (165) 4:25	116:20,25 117:4	lapsedwithout (1) 36:22
4:6,11,23 5:2,6,7	189:18 191:16 203:17	154:4,11,18 155:18,22	178:10	6:5,13 7:2 12:18 14:7	121:5,22 122:15 123:5	laptops (1) 52:12
7:18,20 8:3 9:2	jobs (3) 62:4,12 81:11	156:11,19	kin000082834 (1)	15:4 17:16 18:14	129:5 130:7,9	large (14) 10:20 52:23
12:10,10,16,16 13:3	joel (11) 11:6 13:3,7	157:10,13,22 158:10	176:24	20:18 22:24 23:1	132:9,16 135:24	60:15 61:11 67:12,19
18:24,24 19:16,24	15:25 16:6 17:24 39:9	160:7 162:6,22	kin00008681 (1) 198:20	25:12 29:21 30:17	147:11 157:20 158:8	76:18 80:8 99:4
21:11,14 22:23 23:5	81:23 92:1 93:7 106:8	165:4,14,20	kin000086812 (1)	31:7,13 32:21	161:13,18 162:15	122:12 144:4,5 148:4
24:13,15,24 25:18	john (11) 44:9,24 45:23	166:6,10,18 167:14	198:22	33:4,11,25 40:23	164:9 168:6 170:3	178:6
27:7,8,17,18 28:23	46:5,6,21,25 95:4,10	170:13,25 171:12	kin000086815 (1) 200:2	44:12,25 45:8 47:4,5	177:20 179:20 183:17	larger (1) 80:11
29:1,5,6,15 30:20	96:5,19	173:10,12,16,20	kin000086817 (1) 203:3	48:7 52:4 54:23	184:20,23	largescale (1) 25:11
31:11,12 33:3	joint (4) 116:11 130:15	174:6,22 175:7 176:20	kin00008686 (1) 183:6	62:19,25 63:18	186:15,17,19 187:25	last (17) 15:2 17:2,9
	145:16 163:23	177:9 179:8 180:19				62:5 76:24 77:17

80:24 129:10 141:4	46:5,6,21,25 95:4,10	195:15	117:3 190:2 191:21	manufacturer (6) 13:16	matthew (3) 36:5	mess (1) 199:2
151:5 154:6 160:22	96:5	live (2) 4:20 195:10	192:3 193:6,7 199:21	15:1,3 76:9 88:22	106:9,9	message (2) 28:13
184:12 192:14 203:17	liability (1) 174:24	loads (1) 186:16	203:10,15 207:14	90:19	maximise (4) 12:18	206:6
207:14 208:12	lie (1) 207:2	lobbied (1) 112:19	208:15	manufacturers (3)	82:24 115:22 116:1	messages (1) 126:18
late (3) 50:7 188:9,15	life (4) 18:16 85:7 156:8	lobbying (1) 146:1	lots (6) 36:22 37:18,19	48:21 55:6 99:20	maxwell (1) 159:8	met (10) 32:24 46:21
lately (1) 176:3	186:19	local (3) 31:25 35:6	38:19 152:25 183:17	many (17) 69:11 83:25	maybe (14) 7:2 18:23	99:12 134:7 139:1,13
later (8) 8:24 39:5 40:9	lifesaver (1) 200:14	49:6	love (1) 14:1	84:13 90:9,9,16 91:16	36:5 49:18 67:5 81:23	141:8,12 177:15 198:9
101:21 127:4 134:1	lifestyle (1) 199:10	location (2) 52:13	low (4) 2:20 61:11	96:7 99:2 129:24	104:14,17,19 121:25	metal (3) 27:1 51:16,23
144:18 150:17	light (7) 14:5 17:14	160:24	119:21 160:6	137:21 138:6 145:25	122:9 157:20 171:3	metalfamed (2) 26:23
latest (3) 110:6 119:23	132:6 166:10 170:22	lodge (1) 137:15	lower (1) 61:15	146:2 174:24 185:22	197:8	51:13
140:7	171:13,20	lodger (3) 183:12,16	lpcb (3) 24:12 125:14	187:2	mean (25) 6:24 17:24	method (6) 53:15 71:24
latter (3) 26:20 28:9	like (51) 4:23 6:14	184:2	169:9	march (18) 52:5 113:1	28:6 39:17 40:21	89:3 97:1,14 112:7
112:6	18:23 33:10,21 34:8	logicallyspeaking (1)	ltd (2) 75:15 84:25	123:20,21 124:6	43:21 54:21 71:22	methods (4) 23:16
launched (1) 164:7	35:24 43:16,22 52:13	17:4	lunatic (1) 185:7	126:13,20 127:11	77:14 80:23 87:20	69:20 70:5 75:18
lawyer (1) 156:13	54:23 55:5,18 56:2	london (1) 87:8	lunch (1) 117:14	130:22 139:4 141:5	90:24 115:12 124:9	metres (41) 6:16 15:3
layer (4) 29:10 64:6	58:17 64:6 65:11 75:1	long (15) 12:23 35:1	lurch (1) 195:15	142:2 149:21,23	137:15 158:19,21,22	35:21 40:7 44:12
68:19 107:21	76:3 95:17 96:21 98:7	40:14 46:5,25 67:23		150:11,14,21 173:17	159:16,20 168:18	49:13 53:10 56:8 57:5
lba (2) 54:18 116:4	105:23 108:16 114:2	69:23 70:3,10 75:16		margin (2) 168:18 195:9	193:10,13 197:21	61:21 64:25 66:17
lead (3) 11:10 90:16,16	122:2 123:14 125:9,10	81:17 94:4 154:18		marian (1) 137:20	204:16	69:8 70:19 71:8 74:20
leaders (1) 67:18	130:1 132:22	155:18 208:10		mark (8) 34:20 59:5	meaning (2) 27:15	76:10 78:12 79:14
leading (1) 94:13	147:7,9,12 150:15	longer (9) 40:12 41:17		61:2 92:1 93:7 101:6	132:15	82:14 84:6,12 91:23
leads (2) 97:1,13	161:10 165:3 166:3	64:14 114:16 118:19	m (1) 6:8	189:10 190:18	means (10) 11:2 24:5,6	92:23 95:5 97:21 98:3
leap (1) 21:1	167:10 172:8 176:5	152:15 168:13 196:1	machines (1) 130:3	market (11) 41:3,10	32:6 55:10 66:13	99:21 100:1 102:7
learning (1) 71:23	181:13 182:3 184:8	206:7	magnesium (1) 107:22	56:1 61:20 73:23	127:20 174:19 175:5	106:17 118:11,16
least (5) 17:7 47:5 80:8	186:13,14 188:14	look (91) 1:22 2:19 4:4	mailbox (1) 10:19	84:16 138:19 141:8	202:22	139:19 140:2 165:5
204:8 206:2	196:7 201:25 206:9	6:6 7:6,9 8:13 9:1 11:5	main (9) 11:21 33:20	173:12 191:22 192:6	meant (3) 6:15 14:10	166:7 173:10 176:21
leave (5) 4:16 7:7 108:6	208:13	13:7 15:17 16:4 18:24	43:23 61:11 84:20	marketed (4)	115:11	179:7 183:4
113:4 179:22	limit (1) 115:25	19:17 21:10 22:1,5,20	92:6 177:2 184:16	84:5,11,12 207:19	meantime (2) 48:22	micron (1) 111:8
led (2) 27:11 29:2	limitation (1) 19:25	26:12 27:21,21 29:18	194:9	marketing (4) 5:15 8:1	117:15	microns (2) 124:11
lee (3) 11:20 86:1,3	limitations (1) 35:2	31:9 36:7,17 39:6	mainly (1) 99:6	54:1 163:11	meanwhile (1) 152:24	158:8
left (10) 8:14 79:18	limited (53) 3:7,14 4:24	41:12 50:22 53:2,20	maintain (6) 10:1 85:7	marketplace (3) 84:1	meet (13) 12:2 26:22	middle (7) 36:8 42:18
118:5,18 126:18	5:21,23 23:21	58:8,17 60:1,24 64:19	112:11 129:25 200:10	179:19 203:20	28:11,22,24 51:7	51:4 83:22 102:11
140:11 177:6	24:3,7,15,16,21	65:13 66:2 69:21	207:2	marketplaces (1) 12:15	55:25 80:16 127:15	130:22 136:14
195:15,16 205:7	25:1,8,13,22 26:16,22	76:24 78:18 79:8	major (3) 36:23 105:25	markets (1) 12:4	143:4 144:15 154:24	might (34) 3:9 10:18
lefthand (4) 1:23 19:20	27:8,9,12,14,17	83:14,16,21 86:6	106:2	martin (49) 1:3,9,11,13	173:14	21:21 41:19 43:19
42:5 50:22	28:11,15,20,25 29:3,5	91:21 93:4,5 94:7	majority (1) 141:8	7:7,11,18,22 8:2,5	meeting (61) 13:5	46:20,21,21,22 49:14
legal (4) 122:12 132:18	31:5 32:15 33:4,16,21	95:10 96:3 104:7,8	makes (3) 51:20 173:15	45:15,19 57:15 58:1,4	14:11,14 18:1 38:5	56:13 77:14 87:11
177:12 203:13	34:8,9,11,13 42:23,25	105:8 106:7 110:15	189:24	117:11,13,23,25	48:21 50:1 51:9	96:7,12 111:22 112:23
length (1) 100:5	47:14 51:2,7,19 55:11	113:10,12,23 114:18	169:18 177:8	170:16,19	54:9,10,13	122:25 126:17 128:22
less (6) 17:7 60:18	62:9 70:18 72:11,18	115:13 116:24 117:1	194:8,11,16,17	171:6,16,19,25	58:9,14,16,18,24	142:19 143:4 150:9,10
82:18 85:5 91:5,7	87:6 88:17 89:19	124:4 126:10 129:16	malcolm (16) 31:14	172:3,6,10 179:24	59:22 95:19 99:15	154:12 156:12
let (9) 13:21 35:9,13	102:25 107:19	136:13 137:4 140:17	53:5 58:21 82:9	180:9,12 185:10,14	100:13 101:1,8,8,20	169:24,25 177:15,15
37:12 106:20 110:14	143:13 145:17,19	146:21 149:16 153:19	114:8,12 121:8,16	187:17,21,24 188:17	102:2 116:6 119:3,24	179:17 196:1 204:7
116:20 123:5 206:14	156:13 161:22 164:16	170:11 176:13 178:9	122:8 123:13 127:13	205:14,17,19	120:4 134:1	208:1
lets (24) 4:5 6:1 7:6	170:11 176:13 178:9	183:10 186:24 189:23	139:12 153:23 154:13	206:5,9,16,20	138:4,8,12 139:23	mileage (2) 185:19
8:22 15:17 18:24	183:10 186:24 189:23	192:11 194:2 196:25	181:24 201:25	208:7,18,23,25 209:3	140:1,14 141:4 144:18	186:5
22:20 26:12 31:24	192:11 194:2 196:25	197:3 198:7 200:3	malcolms (3) 123:5	mask (1) 48:9	147:7 153:2,3	miles (1) 44:9
93:4 105:8 113:4	197:3 198:7 200:3	208:19	154:14 166:14	masonry (13) 2:12 7:12	154:6,16 163:6	millichap (35) 13:4 18:3
123:20 124:4 126:10	208:19	looked (7) 5:11 21:2	manage (2) 186:9	8:8,19 26:24 47:23	172:18,22 173:1	36:18 56:15 57:3
130:24 133:16 137:3	looked (7) 5:11 21:2	64:3 68:20,21 83:11	188:22	51:14 72:25 73:2,14	188:24 189:7,13	92:25 94:5 101:1
145:18 153:19 158:3	64:3 68:20,21 83:11	118:5	managed (4) 164:9	107:21 108:3,12	191:9,11,12,14,15,17	102:14 103:3 105:18
176:12,13 206:4	118:5	looking (33) 3:17 10:14	189:5 204:11 205:3	massive (2) 104:6,7	198:12 207:3,5,6,8	114:10 115:5 121:10
letter (40) 77:16 80:25	lines (8) 28:8 30:16	12:25 16:5 24:1,4	management (6) 95:18	mate (1) 36:11	meetings (8) 97:20	123:1 127:13 130:23
87:1,3,10,14,25 88:7	72:16 77:17 111:3	27:13,18 28:7 47:20	156:3 174:23 182:22	material (40) 3:7,12	101:3 120:2 123:8	133:15,17 135:13
89:23 90:24,24 91:5	140:5 192:12 198:23	58:16 62:22	186:4 190:24	23:21 24:3,7 25:13,22	138:6 171:24 173:2	137:8,17 145:12
102:20 103:20	lining (5) 26:25 47:22	63:4,7,8,12 66:4	manager (15) 26:1	26:16 27:7,9,12,17	206:24	153:22 160:18 163:1
145:2,4,10,15	51:15,24 175:22	83:14,16 111:13	35:17 46:11 56:11,12	28:14 29:3 32:15	meets (5) 23:21 28:20	171:19 173:6 178:1
146:14,15,18 147:18	links (1) 7:2	115:16 118:19 124:23	79:11 106:25 140:25	33:16,21 34:8,9 38:21	34:11 42:23 81:5	181:24 185:17 186:21
150:5 153:4,7 154:19	linzi (3) 129:23 153:23	125:12,13 131:15	145:12 164:14 177:25	42:23,25 43:9,9 47:14	melt (1) 85:2	188:24 202:7 203:16
155:19,24 156:17	160:17	135:24 140:3 144:1	200:20 201:17,21	51:2 62:9 72:4 74:19	mentioned (5) 68:7,12	100:16 109:8 180:16
173:5,8 175:21	liquid (1) 119:12	167:17,17,18 207:13	202:4	85:2 86:13 88:24	meredith (16)	5:16,8,9,17 9:24
176:10,13,24 177:22	list (2) 23:15 133:19	looks (6) 18:9 42:17	managers (5) 18:5,13	112:9 119:23 121:25	member (1) 184:2	57:16 58:1 117:23
178:4,14,16 179:5	listed (1) 204:25	111:24 114:2 135:15	52:11 95:16 97:9	124:10 136:1 169:19	memory (1) 10:15	171:20 180:1,9 205:19
letters (16) 13:22 80:11	listen (1) 56:7	165:3	managing (3) 109:24	181:3 200:13	mental (1) 182:24	206:20 208:7 210:3
81:15,24 82:7,8	lists (1) 28:2	loosesic (2) 39:18 65:4	145:11 198:9	materials (7) 16:17	mention (3) 16:11	merely (1) 121:12
87:12,18,20 153:11,14	literally (1) 188:20	loss (2) 178:21 179:2	manchester (4) 44:2,10	60:19 74:16 77:21	101:20 155:10	
156:12,18 172:15,16	literature (3) 8:4 41:13	lost (5) 10:19 36:24	61:24 165:9	85:4 98:1 130:5		
194:22	173:17	37:19 165:10 186:16	mandatory (1) 59:1	matrix (2) 204:24 205:6		
level (6) 3:12 6:9	little (17) 72:8 73:8	lot (19) 31:12 36:24	mandy (6) 9:2,20 10:3	matt (1) 192:18		
16:20,21 25:5 70:20	79:25 80:20 89:7	39:18 55:5 82:22	11:20 12:25 15:21	matter (5) 18:16 91:3		
levels (4) 60:5,11 73:20	109:11 112:5 114:19	86:15 104:21 111:11	mangers (1) 203:16	104:1 135:22 196:1		
75:17	116:13,25 118:25		manner (1) 55:11	matters (3) 170:20		
lewis (8) 45:23	170:21 188:8,9,14,15		manufacture (3)	183:9 185:22		
			112:20,21 159:23			

151:13	25:9 26:19 28:19	need (36) 11:10 13:23	105:2,20 106:6,12,15	numbers (2) 125:9	ones (3) 110:1 149:23	84:5 89:14 91:23
minimal (1) 198:16	34:1,4 39:4 40:24 47:6	18:14,15 37:10,12	109:3,10 133:4	161:7	150:22	92:4,23 95:5 97:21
mins (1) 113:21	54:16 58:19 71:11	38:2 40:15,18 41:14	139:8,22,23		ongoing (8) 47:9 65:1	102:6 115:19 118:20
minute (3) 78:18	79:14,14 93:25 104:16	49:1 54:12 55:22 60:1	140:1,12,18 142:1		131:12 133:25 141:9	123:6,10 127:6 139:19
141:8,13	106:2 107:22 109:12	76:7 86:12 88:16	143:3 144:8		150:16 153:4 186:25	142:4 146:2 160:19
minutes (13) 58:9,11,17	118:25 119:18 122:11	93:8,11,13,14 95:23	145:2,7,20 147:19		onside (1) 93:13	164:25 165:4,12,17
59:22 113:22 128:15	133:3 136:5,6 139:9	102:15 114:21 116:23	148:13 153:2,3 154:16	o2 (1) 119:4	onto (17) 8:9 13:17	166:7 174:6 176:21
134:13 136:24 140:3	141:6 143:17	117:1 126:25 129:6	155:16,18,24 156:18	obligations (2) 19:7,11	14:10,13 35:14 61:9	183:4 203:25 204:16
198:11 205:25 206:1,4	144:21,25 162:15	136:7 144:9 160:25	166:19 167:15 170:15	observation (2) 134:13	72:12,19 75:9,13 77:5	208:12
misconception (1)	176:12 196:7,12	178:18 184:20 196:20	172:8,11,16,22 173:4	141:10	106:17	overall (1) 190:1
80:14	206:6,14,21 207:25	206:13 207:9	175:12 176:18 177:8	observations (1) 134:11	107:10,17,20,23	overarching (1) 202:21
misleading (13) 6:3	morning (6) 1:3,9,10,17	needed (15) 35:19	178:5 179:13 183:2	observing (1) 134:12	108:11	overblown (1) 183:19
24:24 25:17,18 27:6	57:14 209:5	54:16 58:19 67:6	204:15 207:5	obtain (4) 53:16 54:22	op920 (2) 60:6 161:9	overloaded (1) 187:10
30:21 35:13 43:6,11	mornings (1) 118:4	87:13 97:24 104:16	nhbcbca (1) 154:15	144:1 164:10	open (7) 13:10 14:7	overlooked (1) 205:22
71:16,20 142:1 151:3	most (11) 12:9 24:2	132:8 144:21,21,25	nhbcs (1) 179:5	obtained (3) 22:21	15:5 18:15 97:19	overnight (1) 188:12
misleadingly (1) 51:22	48:23 52:7 70:24 71:2	153:15 161:11 182:6	nice (1) 61:20	62:2,6	100:6,21	oversight (5) 5:7,12,24
misled (1) 93:20	72:5 80:6,21 121:2	194:21	nightmare (1) 106:2	obtaining (1) 22:9	opened (1) 108:16	10:23 12:7
misrepresenting (1)	128:6	needs (14) 12:2 30:5	nine (2) 82:11,13	obvious (2) 13:11 14:6	operating (1) 198:16	overwhelmed (1) 57:9
72:2	moulded (1) 82:1	56:1 75:19 85:14	nobody (2) 170:4 199:9	obviously (15) 24:17	operations (1) 173:5	own (10) 4:17 5:7 17:25
misrepresents (1) 70:8	moulding (1) 12:1	86:13 99:18 103:20	nods (2) 123:15 206:3	26:1 37:17 54:13	opinion (9) 77:23	57:7 61:17 68:5
miss (1) 192:19	mounted (1) 107:20	116:23 147:10,13	non (4) 72:12,19	55:19 56:4 65:19	98:6,16 107:9 127:21	133:12 179:11 184:14
missed (2) 10:25 154:13	move (11) 1:20 6:1 8:22	154:24 188:5 205:20	75:9,13	68:19 97:17 98:10	128:21 133:12 138:13	186:15
missing (3) 77:8	66:2 121:11,20 124:24	negative (1) 86:14	noncombustibility (1)	129:17 131:7 193:14	141:18	owned (2) 20:15,17
163:15,24	152:17,21 161:17	negligent (1) 178:23	55:10	199:4 208:2	opinions (2) 29:24 88:4	owning (1) 85:4
mission (2) 192:16	182:9	negligible (1) 85:5	noncombustible (26)	occasion (2) 58:22	opportunity (4) 9:14	oxidesilicate (1) 107:23
193:9	moved (1) 140:24	negotiation (1) 141:5	26:25 47:22 48:6	124:1	97:2 145:21 205:23	oxygen (2) 38:19 115:25
misstatements (1)	moving (7) 15:24 41:24	neither (3) 92:9 166:5	51:15,24 53:16 55:15	oclock (3) 117:14,18	opposed (1) 207:21	ozone (1) 119:22
178:23	120:18 160:9 165:7	172:16	62:23 64:6 68:19	209:5	optimistic (8) 68:22,24	
mistake (1) 26:2	190:21 203:17	nervous (1) 123:16	72:24 73:13 77:5 92:5	october (14) 1:19,24	76:3 82:16,17 142:5	P
mistakes (1) 4:25	ms (40) 1:14,16 8:6	never (15) 3:4,18 14:21	98:7,8,18 99:22 104:3	36:19 38:12 39:6	150:18,19	
mixing (1) 168:8	45:16,20 57:12,22	29:9 55:24 67:10	107:11,20 108:11,13	46:13 52:20 86:2	option (2) 121:23 146:6	pack (11) 34:21 35:11
mixture (1) 171:15	58:5,6 117:8,12,19	87:24,25 112:20,21	200:14 207:18,24	87:2,4 139:12 160:14	options (3) 41:18	37:5 39:9 43:19 78:20
mm (3) 111:14 187:7	118:1,2 170:17,18	139:4 191:6 193:15	none (4) 174:4,12	172:23 186:25	129:18 131:2	79:12,18,24 81:8,22
197:12	171:17 172:5,8,11	195:7 204:11	194:8,16	oddly (1) 42:12	order (5) 107:1 136:16	pages (1) 163:15
modification (1) 119:1	179:22 180:13,14	nevertheless (1) 44:5	nonozone (1) 119:19	odp (1) 119:21	148:15 176:18 179:21	paid (2) 128:16 165:13
modifications (2)	185:15 188:18,19	news (2) 16:10 31:23	nonvented (1) 45:2	offer (1) 148:13	organisation (1) 94:12	pan (1) 168:13
118:22 120:9	205:12,15,18	next (34) 5:8 9:19	nor (1) 166:6	offered (1) 98:7	organise (1) 58:24	panel (10) 20:23 67:20
modified (4) 116:5	206:3,13,15,21,22,23	15:24 16:5,5 32:2	normal (1) 30:8	offering (1) 71:10	original (5) 56:3 89:17	74:6 75:23 76:1,21
119:2,10,11	208:5,23,24 209:1,7	47:1,18 48:18 69:19	normally (4) 4:13 132:5	office (1) 96:21	134:7 156:2 167:21	111:15 141:10 163:23
modifying (1) 38:6	much (32) 1:13 4:16	70:17 77:4 80:7 81:10	158:10 200:13	officer (2) 86:13 173:7	originally (2) 48:7 59:9	208:8
molc (1) 47:13	5:18 6:13 17:7,17 25:8	111:8 114:8 115:18	notably (1) 163:13	officers (2) 35:7 106:10	osman (6) 9:2,20 10:3	panels (8) 55:17 67:13
moment (16) 4:2 6:2	35:19 40:14,17,24	118:21 121:7 127:10	note (6) 16:24 41:13	offices (1) 99:13	11:20 12:25 15:21	73:19,21 116:1,3,14
39:3 52:3 55:22 57:13	49:20 58:4 62:3 95:16	129:6,18 130:8,11	106:22 155:3 175:2	official (2) 41:16 58:19	140:19 156:16	136:5
78:17 80:1,3 103:5,17	117:16,25 120:25	148:8 159:7,7,10	186:7	officially (1) 164:1	60:23 66:11 91:16	paper (4) 80:19 189:11
109:11 112:17 113:4	123:10,14 125:18	160:21 168:23 171:7	noted (2) 134:17 141:12	offrecord (1) 169:20	114:10 121:10 127:12	190:18 192:18
117:10 179:23	132:7 171:6 177:10	175:3 191:15 196:20	notes (8) 38:5	offtheself (1) 110:6	140:19 156:16	paragraph (81) 2:25 3:5
monday (3) 36:19	180:3 192:17 197:8,18	nhb000006451 (1)	189:13,24	often (8) 10:7,9,11	otherwise (4) 84:18	7:9 9:6,16 16:8 19:19
153:25 177:5	208:8,18 209:3,6	96:17	191:10,11,17 198:21	81:19 83:6 87:12	105:10 139:17 187:5	22:7 27:5 28:14 29:19
money (3) 32:9 65:12	murtagh (1) 173:6	nhb000006452 (1) 95:9	200:3	107:22 162:14	ought (2) 6:4 93:1	30:16 32:17,19 37:22
186:16	must (14) 26:22,25	nhb00000703 (1)	nothing (1) 66:16	oh (5) 56:16 57:1 99:1	ourselves (2) 89:1 168:9	39:10 40:10 41:12
month (3) 154:6 196:20	28:11,22,24 38:11	140:17	notice (3) 148:14	101:16 117:3	outbreak (1) 85:8	47:4 48:18 51:9 59:8
203:17	51:15 59:10 85:11	nhb00000798 (1) 42:2	169:24 170:5	ok (2) 192:16,24	outcome (3) 116:4	62:5 69:16,19 70:17
monthly (2) 54:10	129:2 136:17 166:17	nhb000007983 (1)	noticed (1) 199:24	okay (48) 3:9 5:12 6:1	120:15 121:4	72:10,16,17 73:8
192:19	185:24 208:25	42:18	noticing (3) 8:6 15:11	7:6 9:22 20:15 28:5	201:11,13	75:1,5 76:25 83:19,19
months (7) 10:10 80:7	myself (7) 17:24 79:17	nhb00000810 (1) 43:25	190:7	29:17 34:14 43:20,24	outer (2) 92:8 111:16	86:5 88:18,20 89:14
139:15 154:23 188:10	81:22 96:10 149:17	nhb000008101 (1) 46:5	notification (1) 154:25	49:22 50:18 56:17	outermost (1) 29:10	91:25 92:2 106:14,17
199:11,14	187:15 188:6	nhb000008102 (1)	notify (2) 19:13,21	57:1,12 66:1 78:6	outline (1) 178:13	107:6,7,24 131:15
moon (2) 54:15 56:5		46:24	november (18) 1:1	96:12,15 101:16,25	outlined (1) 93:22	134:3 137:14 141:3,25
moorebick (49)		nhb000008103 (1)	8:23,25 9:4 10:5 12:24	102:4 110:8 111:25	outlined (1) 93:22	143:19 145:19,24
1:3,9,11,13		47:18	42:8,14 44:3,10,21	112:22 121:7 122:4	outlining (1) 93:15	147:20 148:8,12
7:7,11,18,22 8:2,5	naked (2) 89:12,13	nhb000008104 (1)	45:22,24 49:4 50:24	127:18 130:10 140:4	output (3) 116:10 119:7	149:12 151:3,5 157:6
45:15,19 57:15 58:1,4	name (2) 46:11 84:1	45:21	91:22 162:19 209:10	143:3 152:19 165:17	120:15	160:22 164:6,16,17,18
117:11,13,23,25	names (1) 81:5	nhb000008105 (1) 44:7	nowhere (1) 142:16	168:4 170:14 172:9	outside (2) 64:9 207:23	165:7 167:12 168:23
170:16,19	national (4) 2:21 23:18	nhb000008106 (1) 44:7	nt (1) 166:15	173:3 174:16 176:9	outsides (1) 98:11	170:22 173:11 175:4
171:6,16,19,25	94:9 180:15	nhb00000922 (1) 173:8	number (25) 31:13	180:11 182:14 184:20	outwardly (1) 199:22	176:25 177:2 178:9,11
172:3,6,10 179:24	natural (1) 24:2	nhbc (76) 44:2 45:24	60:23 83:7 91:16	193:11 202:6 206:8	ovens (1) 38:7	183:10,24 189:14
180:9,12 185:10,14	nature (5) 49:10 108:25	46:6,7,18 50:8 93:25	93:20 95:22 96:5,9	207:12 208:17	over (55) 6:16 15:3	194:2,4
187:17,21,24 188:17	181:19,23 185:2	94:2,10,17 95:4,16,23	99:4 102:17 104:15	old (2) 39:12 71:13	16:4 17:18 35:21 40:7	paragraphs (5) 2:25
205:14,17,19	nb (1) 32:20	96:6 97:19 98:24	105:2 127:12 148:16	once (12) 13:16 47:9	44:7,11,16 45:9 47:11	4:11 88:11,14 94:8
206:5,9,16,20	near (1) 203:5	99:7,8,12,15,25 100:8	159:9 162:4,11 166:2	54:6 64:8 85:15 97:20	49:13 53:20 54:15	parameters (1) 98:9
208:7,18,23,25 209:3	nearer (1) 15:18	101:20	167:9 168:7 184:10	117:1 133:3 152:14	56:5,8,25 61:21 65:3	pargeter (4) 160:17
more (42) 3:11 6:8	necessarily (1) 135:23	102:1,5,15,17,23	191:14 199:4 200:15	166:13 183:1 204:22	69:8 77:23 78:6,12	162:24 190:22 191:9
12:16 13:16 16:20	necessary (2) 171:25	103:16,24 104:10	204:21	onerous (3) 25:9 60:18	79:14 80:7,9 83:20	pargeters (1) 160:5
	173:21			141:7		parking (1) 204:8

part (36) 3:18 5:13 38:14 47:2 48:12,13,14,15 51:10,19,21,21 59:21 60:15 71:9 73:21,22 76:19 82:23 98:10 100:2 101:22 108:17 115:18 134:13 142:24 148:20,21 151:18 158:14 180:24 181:16,17 191:6 202:21 203:6 particle (3) 64:9 72:13,19 particles (1) 207:21 particular (6) 6:17 46:19 50:15 60:24 80:7 136:5 particularly (2) 148:16 183:1 particulars (2) 19:14,22 parties (2) 19:22 95:20 partly (1) 78:4 partnership (1) 109:13 parts (3) 26:19 46:16 155:8 parttime (1) 199:10 party (2) 9:14 21:12 pass (17) 38:13 60:2,15,17,18 80:16 86:14 99:24 114:21 126:24 132:2 134:6 138:10 142:19 159:9 165:23 168:18 passed (5) 98:19 147:24 152:19,20 166:24 passfail (3) 134:9,14 142:5 passing (1) 168:21 passionate (2) 151:21 186:18 patently (1) 4:22 patient (1) 175:12 pause (18) 15:13 17:23 28:17 29:11 43:7 50:15 57:20 75:25 76:18 111:10 113:17 117:17 137:3 157:19 177:1 180:4 201:23 206:12 pausing (2) 127:16 128:3 pay (1) 195:1 paying (1) 29:24 pending (1) 116:4 penetrated (1) 108:18 penetrating (1) 64:11 pentane (1) 119:12 people (16) 6:15 31:18 50:5 65:20 99:2 100:6,7 106:9,11 154:10 166:3 183:17 188:6 199:5,12 205:23 per (4) 16:12 30:9 134:7 188:2 perfect (1) 135:25 perforated (4) 111:18 124:15 159:15,18 perforations (2) 21:14 159:24 perform (4) 47:25 54:25 55:11 179:20 performance (27) 2:8 16:16 20:5,13 59:2,19 62:23 63:9 64:5 71:10 73:20 75:8,12 77:2 85:1 93:21 100:18 104:2,8 120:17 125:13 130:2 194:25 200:10,22 201:20 202:12 performed (5) 34:16 47:7 48:2 129:9 200:15 performing (5) 21:14 27:2 55:20 77:21 80:8 performs (1) 71:12 perhaps (12) 11:11,25 13:9,19 14:15 83:17 142:5 154:12 192:24 199:23 200:10 201:25 perimeter (1) 115:24 period (4) 10:7 91:12 136:19 141:11 perior (2) 95:13 100:9 person (7) 110:3 183:15 188:10 200:23 202:13 204:14,15 personal (6) 182:5 185:11 187:21,23 188:3 190:3 personally (4) 17:6 34:25 168:18 181:8 perspective (5) 125:22 166:12 167:1 182:5 200:14 perspiring (1) 190:2 pertinent (1) 148:16 perusal (1) 144:11 pf (1) 155:10 pfs (1) 129:15 phenolic (13) 8:17 53:6 54:9 58:9 59:3,4 72:4 75:13 85:1 144:6 145:22 155:10 157:9 phil (16) 55:9 56:11,19 65:11 87:11 126:21,23 127:2 134:18,21 169:15,18 184:22 196:19 201:25 202:8 philip (15) 31:9,11 33:13 52:22 56:18 58:22 61:1,2 64:19,22 65:5 66:10 82:6 87:2 202:6 phils (3) 54:8,13,20 phosphoric (1) 129:9 photo (2) 143:8 163:17 photograph (3) 46:25 161:22,25 photographs (2) 162:2,4 phrase (2) 13:16 15:9 physical (1) 169:5 physically (2) 198:2 199:2 pick (3) 83:12 118:3,4 picked (1) 183:23 picking (3) 84:22 118:18 171:24 picture (3) 7:16 74:24 122:4 pictured (1) 7:15 pink (1) 170:3 pir (3) 48:21 145:22 166:4 pitch (2) 15:6 121:1 place (4) 13:6 58:15 73:23 172:17 plainly (1) 27:5 plan (3) 98:4 147:7 176:19 planning (1) 39:13 plans (1) 32:7 plastic (2) 84:5,15 play (3) 18:14 75:24 128:25 playing (2) 191:22 192:6 please (2) 1:7 9:25 20:11 31:25 57:17,17,21 66:20 68:7 69:17 81:2 106:19 116:19 117:12,14,15,18 143:14 180:2,5 206:11 209:5 pleased (2) 30:17 33:12 pls (1) 153:25 plug (1) 39:1 plural (1) 71:2 pm (8) 117:20,22 177:5 180:6,8 206:17,19 209:8 pointed (1) 124:11 pointing (1) 88:17 points (1) 92:6 polyurethane (1) 155:9 poor (1) 182:23 poorer (1) 20:5 portfolio (7) 62:4 63:8 144:5 145:25 147:21,22 148:20 portrayed (1) 7:23 position (24) 13:19 92:22 93:1,9,10,16,20 105:19,21 121:21,22 137:21 142:1 148:15 150:14 166:5 172:20 177:7 178:24 179:12,15 192:14 195:1 198:19 positioned (1) 163:20 positive (6) 77:24 91:5,7 101:25 102:2 135:7 positively (1) 156:19 possibility (1) 149:3 possible (16) 12:17 13:10 14:8 16:25 17:17,21 41:19 52:10 95:17 96:4 127:21 129:8 159:17 162:8 181:23 202:22 possibly (2) 172:1 202:25 potent (1) 12:16 potential (1) 16:11 potentially (14) 36:24 37:19 63:12 82:20 122:16 123:17 125:13 150:9,12 157:12 160:2 161:20 200:25 202:15 powerpoint (3) 110:14 124:4 158:3 practical (4) 114:23 146:6 186:6 189:17 practically (1) 88:21 practice (2) 82:6 156:5 precautions (3) 69:24 70:4,11 precedents (1) 146:1 precise (2) 73:5 169:3 preclude (1) 17:4 precursor (1) 190:18 predominantly (1) 81:21 prefer (1) 177:10 prepared (2) 63:15 151:2 present (7) 4:13 58:10 69:4 81:11 120:1 138:3 188:25 presentation (7) 80:13 110:15,17 124:4,8 149:16 158:3 presented (5) 5:16 69:13 99:17 141:4 166:2 presenting (2) 71:25 156:15 pressure (15) 35:15 37:10,23 53:14 98:23,25 135:13 139:7 183:3 188:4,7 189:4,17 199:18 207:1 pressures (3) 55:13 189:9 191:15 pretend (3) 192:17 193:22,23 pretty (1) 4:16 prevent (2) 52:13 176:19 preventing (1) 177:8 prevents (1) 24:17 previous (7) 14:5,16 40:16 42:13 93:23 107:6 150:14 previously (3) 10:18 43:3 65:11 primarily (2) 20:15 188:3 print (1) 79:17 printed (1) 162:12 prior (5) 18:21 130:4 134:1 148:14 182:10 priorities (1) 195:10 priority (2) 65:3 185:25 privileged (1) 177:20 pro (2) 61:14 77:10 probably (7) 37:12 57:7 87:11 110:3 120:4 161:9 188:8 problem (10) 13:24 21:16 34:17,18 161:14 183:16 193:3 199:4 203:13 204:12 problematic (1) 167:10 problems (13) 35:5 40:2 168:10 182:24 184:11,19 185:1,11,13 187:8,18,21 207:7 procedures (2) 186:1,2 process (9) 32:7 33:8 141:17 142:21 167:7 188:13 192:17 193:10,16 procure (1) 130:3 procured (1) 139:1 produce (6) 30:10 80:4 166:10,23,25 170:23 produced (7) 18:22 88:8 119:25 167:6 179:18 200:24 202:13 producing (2) 111:11 119:21 product (125) 2:11,20,22 3:12 4:9,19 6:17 8:14 12:10 16:18 21:24 24:15 25:1 29:25 30:2 31:1,3 33:21 34:16 41:8 54:12 59:1,19 60:1 64:14,15 65:1 68:4 71:17 73:25 75:10,15 76:10 77:6,24 81:2 84:8,9,14 85:5,13 89:19,24 90:8,20,21 97:23 100:15 102:19 105:4 107:9 111:7,12,21,23 112:11,13 120:10,11,25 124:21 125:8 126:1 144:20 146:5 149:15 152:12,12,15,18,20,20 155:25 156:23 157:7,8,11,18,25 158:1 159:11,12,23 160:3,24 161:4,12,16,19 162:10,17 164:7,21,23 165:20 166:12,24 167:3,5 168:4 169:14,14,21 170:20 171:1 173:16,20 174:22 175:7 181:13,13 182:6 192:16,23 193:18 195:6 196:13 200:7,18,23,25 201:4 202:12,14,22 production (17) 37:10,23 38:2,9 43:14 112:9 125:10 126:5,6 129:25 141:21 157:11 162:11 166:11,25 167:6 193:19 products (23) 30:5 38:15 59:4 60:6 65:13 81:4 84:18 110:10 122:19 126:6 130:1 144:7 148:2 168:25 169:16 179:20 192:3 193:1 194:25 196:10 200:11,12 202:24 professional (1) 189:19 professionals (2) 15:5 93:21 profiles (1) 65:14 program (2) 102:22 103:1 programme (1) 164:22 progress (2) 10:1 17:1 prohibitive (1) 146:8 project (32) 36:12 60:24 66:7 68:2,7,12,17 70:25 78:22 79:5 80:3 81:16,16 87:21 94:22 95:3 102:7,7 106:18 107:16 108:1 109:24 144:2,25,25 147:5 164:20 165:8,13,16 194:8 204:25 projects (31) 6:18 35:20 40:11,23 65:3 66:4,9 69:8 80:11,21 83:25 85:13 87:6 91:16 95:23 96:6,7,13 98:5 102:17 105:2 106:22 109:13,18,22 154:20 164:24 165:4 195:11 204:8,23 prolonged (1) 60:11 promises (1) 144:16 prompt (1) 10:15 proof (4) 4:15 5:14,14 176:21 proofed (1) 82:8 proofing (1) 5:25 propagation (3) 59:11 60:5 180:25 proper (1) 70:1 properly (3) 30:7,15 178:21 properties (3) 29:25 157:8 159:10 property (2) 85:3,7 propose (3) 97:5 115:19 177:9 proposeconsider (1) 115:17 proposed (5) 9:8 70:24 92:10 141:18 179:5 proposing (9) 62:19 62:16 74:7 119:1 155:5,7,8 151:11 179:8 protect (1) 177:6 protracted (1) 10:12 prove (8) 51:12 53:16 55:9,10,14 98:2 103:8 168:3 proved (3) 47:24 124:25 126:6 proven (1) 120:22 provide (17) 55:25 74:10 102:6 103:18,19 104:16 114:23 140:8 144:22 154:17 160:24 172:18,19 173:20 175:1,8,25 provided (11) 50:5 54:1 69:24 70:4,11 153:11 158:1 159:4 162:2 174:5 194:20 provider (1) 174:23 providers (1) 94:14 provides (1) 81:1 providing (13) 63:10 81:8 85:12 108:24 109:1,2 139:14 149:10 153:10,13,13 155:24 161:7 proving (1) 168:2 provision (2) 69:24 163:13 provisions (2) 2:23 4:10 public (2) 79:25 141:19 publication (2) 155:2,5 published (2) 6:21 163:7 pull (2) 39:1 194:21 pulled (5) 59:9 94:21 95:2 194:9,16 pulling (2) 143:14 194:18 purely (1) 152:24 purports (1) 7:19 purpose (10) 9:11 22:4,9 70:12 89:20,24 90:8 107:10 120:8 146:5 purposes (4) 5:15 120:6,10 174:23 pursuing (2) 166:18 167:15 push (7) 12:17 41:6 52:13 58:19 97:24 181:20 189:18 pushed (2) 12:9 129:23 pushing (6) 38:9 99:19 130:24 154:17 156:16 179:21 pushy (2) 133:7,8 puts (1) 34:12 putting (8) 24:21 31:4 123:10,14 146:15 179:16 186:7,17	Q q (634) 2:5,16 3:4,9,17,21,24 4:5,22 5:5,10,12,19 6:1,13,20,24 7:4,6 8:12,22 9:18,23 10:22 11:1,4,17,23 12:6,16,21 14:5,10,15,19,21,24 15:8,16 17:14,20 18:3,7,11,13,19,24 19:4,6,10,13,19 20:12,19,25 21:2,6,8,18,21,24 22:1,17,20 23:5,9 24:1,10,13,19,23,25 25:6,12,16,19,25 26:6,11 27:5,11,23 28:4,6,19 29:1,8,13,16,18 30:14,21,24 31:4,9,17,21 33:13,16,23 34:5,14,19 35:19,25 36:6,15 37:3,7,17,22 38:1,8,11,16,22 39:3,21,25 40:2,6,9,21 41:1,9,12,23 42:5,12,18 43:6,12,17,20,24 45:14 46:1,24 47:18 48:5,9,14,17 49:4,9,12,16,20,22 50:1,7,11,16,18 51:1,19 52:2,15 53:1 54:5 55:13 56:5,12,14,16,18,22,24 57:2 58:14,21 59:8,17 60:10,21 61:5,7 62:12,18,24 63:11,15,21,23,25 64:13,17 65:8,15,23 66:1,24 67:8,12,19,22 68:15,24 69:7,11,14 70:8,16 71:7,11,16,19 72:2,7,23 73:5,8 74:4,12,17,19,22,25 75:4 76:2,5,9,13,15,20,24 77:13,17 78:6,9,14,16
---	---

79:12 81:15,19,24	177:14,18 178:1,3,9	rarely (1) 26:9	recollections (2) 99:14	185:22	71:1,5,7 100:4 163:18	191:21 204:23
82:3,6,9,11,18,23	181:1,4,10,12,24	rather (6) 26:24 51:14	102:2	relates (3) 8:16 16:14	reposition (1) 116:1	responsible (6) 10:17
83:5,9,11	182:8,15,22	72:24 117:11 121:14	recommend (3) 69:5	186:4	represent (1) 141:7	26:3,6 36:1 171:23
84:4,9,11,18,20,22	183:1,6,23	153:10	70:18 139:18	relating (4) 65:10	representational (2)	192:4
85:20,23,25 86:19,25	184:6,15,17 185:1,5	ratified (1) 143:2	recommendation (1)	161:22 163:15 186:6	75:11 77:7	rest (2) 46:7 121:12
87:12,18,22 88:2,6,11	186:21,24 187:8,12	rd (2) 119:24 196:11	68:25	relation (10) 2:8,18	representative (5)	rested (1) 133:11
89:10,13,23	188:24 189:3,7,13,23	rd165 (1) 107:19	recommended (1)	113:7 122:19 124:12	7:18,20 63:25 64:2,4	restriction (3) 17:3,9
90:2,6,12,16,24	190:7,11,15,20	reached (2) 148:25	128:18	142:2 156:10 158:23	represented (1) 122:19	28:1
91:7,9,12,15,19	191:2,6,8 192:1,3,9,22	151:6	recommending (3)	177:9 191:4	representing (1) 156:1	restrictions (1) 16:11
92:15,21,25	193:3,5,9,21 194:1,16	reaching (1) 151:1	65:15 68:2 118:23	relationship (1) 94:16	represents (2) 70:24	restrictive (2) 17:8
93:4,19,24 95:2,8	195:4,8,18,24	reaction (2) 25:20	record (1) 125:9	relatively (1) 73:15	71:3	108:25
96:12,15 97:11,21	196:1,14,17,22,24	175:21	recorded (1) 191:18	relaxed (1) 59:13	reprieve (1) 35:19	result (23) 9:12 16:14
98:4,15,17,22	197:13,21,24	read (12) 5:18 17:3	recording (1) 134:11	release (1) 59:12	request (8) 9:15	93:19 112:12 115:3,10
99:10,12,24	198:2,7,19 199:16	19:6,9 26:10 31:24	records (1) 157:11	relevance (3) 29:13	54:9,13 95:18 96:23	130:25 131:4,16,17,23
100:6,13,17,21,25	200:1 201:4,6,11,16	46:2 62:6 88:16 96:23	recurring (1) 186:7	74:13 98:13	99:19 148:14 164:13	135:7,10,25 138:12
101:5,7,12,15,17,20,25	202:2,4,6,9,21 203:2	176:3 193:12	redacted (2) 197:5	relevant (14) 8:8 33:1	requested (2) 153:4	149:9 163:7,24
102:4,10 103:8,24	204:2,20 205:8		203:6	35:24 41:17 52:10	154:24	167:21,21 172:18
104:10,20,23,25	207:10,12	reader (1) 29:2	redaction (1) 203:8	53:25 71:7 74:22,23	requesting (1) 173:22	181:16,17
105:8,13,18,22	qualification (1) 28:1	readers (1) 74:25	reduce (1) 160:9	79:15 97:22 136:23	requests (1) 172:14	resulted (2) 136:24
106:1,3,12,14	quarter (1) 191:18	readily (2) 45:5 128:19	reduced (4) 59:20	163:15 189:16	require (3) 107:19	141:20
107:1,4,15	queries (8) 49:10 62:10	reading (2) 24:2 27:11	104:4,6 163:17	reluctance (1) 55:5	186:1 200:13	resulting (1) 179:1
108:4,7,15,19,22	64:20 83:2 106:6,12	reads (1) 132:22	reducing (1) 115:24	reluctant (3) 67:16	required (9) 16:16	results (13) 23:20 42:22
109:1,6,8,20,24	193:7 204:22	ready (3) 1:11 58:1	180:9	79:25 104:10	68:6,11,16 144:8	47:6 89:6 92:12,17
110:4,8,12,14,20,22	query (2) 44:15 78:21	real (7) 13:24 38:22	refer (3) 68:7 69:17	remains (4) 32:23 129:7	153:25 158:24 176:21	121:5 129:8,21 137:23
111:2,6,13,21,25	question (23) 7:8,22	40:6 64:7 117:1 166:5	137:9	198:17 208:7	206:7	180:19,22 181:2
112:3,15,18,22,25	20:11 22:8 28:18	197:14	reference (10) 11:14	remember (49) 8:6	requirement (14)	resume (2) 206:6 209:4
113:4,10 114:5,8,15	40:17 41:22 57:2	realised (2) 14:16	16:10 29:8 41:13	15:8,11,14	5:20,23 23:10,12	retain (2) 112:5 125:15
115:7,14 118:14,18,25	74:13 77:10 79:19	194:17	51:20 113:16,18,24	18:13,17,18,22 20:9	26:14,22 28:11 29:5	retardant (1) 110:10
119:12,15,18	85:10 90:23 121:3	reality (2) 72:25 75:21	170:19 197:2	31:21 33:14 49:16	32:13 59:13 88:17	retardants (2) 120:5,7
120:1,5,12 121:3,7,19	127:6 129:7 130:8	really (27) 8:10 11:20	referenced (4) 34:2	52:8 54:15 65:20 87:9	92:24 99:5 169:4	revealed (1) 182:22
122:4,11,14,18,21,23	141:14 166:2 191:22	41:4 43:7 49:17 55:24	134:25 144:10 169:2	99:16 102:8 103:4	requirements (17) 3:5	revert (3) 166:14
123:1,13,16,18,20	193:12 194:5 207:13	64:10,11 98:12 104:1	references (1) 163:18	109:15,20 110:20	28:20,24 32:24 51:8	170:24 171:8
124:1,4,11,14,17,20	questionable (1) 98:14	108:20,22 122:10	referencing (1) 155:12	112:22 118:23 119:13	53:9 58:25 59:3 89:2	reverting (1) 167:13
125:4,17,23	questioned (2) 67:6	132:17 152:22 156:17	referred (1) 176:6	121:20 124:1	95:25 127:15 136:18	review (8) 13:5 68:4
126:2,8,10,19	79:14	159:24 178:7 185:4	referring (31) 5:2,6	128:12,15 129:1	141:12 151:21 184:16	115:16 126:25
127:8,19	questioning (1) 192:6	195:17 196:6 198:24	66:24 68:12 71:1 86:7	130:11 131:21 138:8	186:12,13	141:16,20 142:21,23
128:3,9,12,20,24	questions (26) 1:15	199:2 202:25 207:7,8	89:11 97:11,15 102:18	139:10 140:11 142:12	research (10) 111:22	reviewed (3) 85:16
129:4,13,21	40:6 43:22 50:9 55:7	208:4	105:3 119:15 122:25	153:5 156:6 159:22	124:20,24 138:24	107:16 150:17
130:6,8,10,15,17,20	68:9 69:18 78:9,10	reams (1) 192:18	147:20 148:1 149:12	172:22,25	149:14 152:11,15,23	revised (6) 9:4 10:5
131:15,25	82:25 91:22 94:21	reason (4) 20:7 38:22	151:9 164:5 167:3	176:11,16,23 178:5	196:11,15	15:22 50:18 51:1
132:4,11,18,23	95:4 116:19,22 118:8	103:16 122:7	171:4 176:7	181:21 189:1,5 202:4	resemble (1) 92:10	118:6
133:1,8,10,14,23	157:2 180:16 193:24	reasons (5) 5:15 120:23	192:1,2,22,24 193:1	remind (3) 83:17	reserved (2) 122:8,11	revisions (2) 2:1 9:15
134:16 135:13,16,22	205:13,20 206:21,23	155:12 167:9 168:7	194:13 196:4 201:21	101:13 149:17	residential (2) 79:5 87:7	richard (13) 61:3 66:11
136:4,11,22 137:2,14	207:9 208:12 210:5	recall (25) 6:21 14:12	202:2 203:24	remotely (1) 92:9	resistance (1) 151:22	93:7 101:3 140:19,24
138:3,8,12,15,23	quick (2) 22:12 183:25	18:20 46:11 49:22	refers (3) 7:11 167:12	remove (5) 106:19	resistant (1) 23:17	145:10,11 153:22,22
139:3,6,12,17,22	quickly (5) 93:4 116:9	50:1 52:19 56:6 57:2	176:4	108:6 162:9 195:6	resolve (4) 95:17 98:24	163:1 172:24 198:9
140:1,4,8,11,15,17,22	119:6,25 120:13	62:18 65:8,15 92:25	reflect (1) 13:19	204:10	187:5 205:3	riding (1) 86:15
141:25 142:7,16,21	quite (16) 18:9 24:4	105:18 119:11	refuses (1) 37:3	removed (6) 17:9 51:3	resolved (2) 21:19 193:8	rig (11) 47:12 109:21
143:3,8,13,17,19	45:5 46:5,6 67:3,25	121:3,5,19 138:5	refusing (1) 40:4	65:1 93:11 165:14	resources (1) 198:10	113:8 123:24
144:14,20,22	70:16 97:19 101:24	140:1,3 156:7	regard (3) 92:6 142:13	203:18	respect (6) 17:25 68:8	128:14,17,21,25
145:2,9,15,18	128:19 178:6 184:3	159:21,23 201:22	144:18	repeat (6) 43:2 152:18	69:18 85:10 177:21	134:24 143:9 151:1
146:13,17,21 147:1,18	199:23 201:15 203:4	receipt (2) 154:21	regards (12) 11:19	180:18 181:2 200:17	191:3	righthand (4) 72:17
148:4,8		163:16	39:11 43:8 66:21	201:8	respond (6) 67:22 96:16	73:9 161:25 192:12
149:11,18,20,24	R	received (11) 31:17	114:12 121:16 149:1,3	repeated (1) 201:10	98:4 123:7 141:2	rigid (1) 8:17
150:1,4,6,11,13,19,24		44:4 45:8 95:3 132:14	151:6 156:1 169:21	repetitively (1) 32:8	202:16	rise (7) 35:3 61:25
151:5,24	rainscreen (16) 8:17	134:4 135:6 149:6	170:13	rephrase (2) 20:11	responded (1) 97:8	83:25 85:13 155:7
152:2,7,11,24	23:1 32:1 45:2,4,11	154:10 177:4 183:7	registered (8)	90:23	responding (4) 105:14	203:10 204:9
153:2,7,10,16,19	47:8 55:3,17 67:16	receiving (1) 53:8	22:1,4,10,12 36:9	replace (1) 39:12	137:10 140:22,24	risk (5) 2:20 61:12
154:9,15 155:15,21	81:8 83:24 88:24	recent (5) 53:20	41:25 42:2 107:18	replacement (2)	responds (2) 86:1	84:24 156:8 174:23
156:3,8,19,23	123:21,23 173:12	59:11,20 88:13 128:6	registering (1) 175:6	40:14,16	137:17	road (1) 87:8
157:1,16,23	rainscreens (1) 53:11	recently (2) 72:5 185:23	regret (1) 187:3	replacing (2) 116:3,13	response (30) 11:6	robin (1) 130:5
158:3,12,15,17,19,22,25	raise (7) 65:14 115:22	recipient (1) 121:13	regularly (1) 186:8	replicated (1) 136:9	15:8,9,12 22:5 44:20	robust (1) 80:4
159:3,21 160:4,12	128:24 156:4 164:1	recognise (2) 146:14	regulation (3) 27:10	replicating (1) 62:13	54:8,8 65:5,7,8 66:14	rochefort (11) 31:14
161:4,13,18,21	165:12 185:11	185:25	95:25 144:10	report (22) 67:8 68:8	79:23 83:15,17 85:25	53:5 58:21 82:9 114:8
162:8,18 163:4	raised (9) 65:6,9,20,24	recognised (2) 86:7	regulations (9) 2:2,22	69:17 70:23 71:2,3,14	88:13 93:15 97:9	121:8 123:13 127:13
164:5,16 165:3,7,17	78:11 83:2 92:23	146:8	5:17 27:19 30:1 74:15	87:15 97:17 100:2	105:5 123:5 126:17,19	139:12 153:23 181:24
166:5,9,18,23	187:12,25	recognition (1) 108:25	88:15 155:8 181:7	117:1,5 123:25 127:24	127:9 176:10,13,15,15	rockwood (3) 61:16
167:3,5,12,22	raising (5) 40:6 61:13	recollect (13) 49:7,25	regulatory (3) 9:9 59:14	128:4 131:1 141:21	181:25 187:12	122:13,19
168:11,15,17,22	105:15 129:1 139:9	50:17 68:22 101:24	146:4	159:9 163:14	responsibilities (2)	role (8) 56:21 94:11
169:11,22 170:2,8,14	ran (4) 58:20 134:19,21	109:16 111:24 112:17	reinforce (2) 28:13 29:2	164:10,13 166:2	94:11 203:18	141:2 189:20 191:3
172:14,22,25 173:3	135:2	120:18 124:2 129:3	relate (3) 59:18 157:11	reported (1) 154:13	responsibility (10)	200:5 203:17 204:17
174:15,18 175:12,21	randal (2) 133:20	138:11 201:15	162:3	reporting (1) 115:4	20:16 26:9 36:24 54:5	roll (1) 168:4
176:6,10,13,18	135:18	recollection (1) 101:25	related (3) 52:16 93:12	reports (6) 70:23	69:3 99:3 156:9,16	rolland (1) 78:24
	range (2) 148:23 168:5					

roofdec (1) 61:16	76:18 80:8 97:18	110:18,24,25	15:21 16:5 31:12	43:1	sketch (1) 163:19	132:7 165:23 168:10
room (3) 57:18 180:3	148:4 165:22 168:3	111:3,9,10 112:25	34:20 43:21 50:19,20	sick (1) 127:2	sleep (2) 190:4 198:16	171:2 177:13 186:22
205:23	scan (1) 31:21	113:1,23 114:13,15,24	58:22 65:18 67:6,24	side (18) 19:20	sleeping (1) 190:12	187:14 189:12 190:17
round (3) 130:4 175:16	scenario (3) 24:8 88:1	115:4 116:9 117:8	71:5 79:19 85:25	24:21,21 41:4,6 50:22	slide (1) 110:23	193:17 199:6 205:5
196:16	132:6	118:15 119:6,15	106:7 107:4 163:4	72:17 73:9,24 109:25	slightly (2) 42:12	208:11
route (11) 3:22 5:3,21	scenarios (1) 165:25	120:14 121:8,17	178:4,6 205:1	122:3 159:18,19	115:22	sorted (2) 48:22 65:2
34:11,15 70:6 88:19	scene (1) 189:16	123:25 124:6,7,18	sentence (6) 24:1 73:9	162:12 171:23 177:12	slowly (1) 83:25	sorting (1) 186:16
89:16 104:14 125:16	scenes (1) 38:20	125:17 126:16 127:5,8	76:25 78:13 136:15	192:12 193:19	small (6) 13:21 38:18	sorts (1) 39:16
168:1	schedule (2) 124:18	128:1 130:6 131:13	171:7	sifting (1) 48:24	61:9 97:18 116:4	sotech (2) 20:15 21:8
routes (1) 63:6	159:4	133:19,21 135:11	separate (4) 16:15	sign (3) 81:24 103:20	168:3	sought (1) 6:9
rs5000 (4) 84:9,11	scope (15) 8:14	136:3,14,20 137:7,12	56:19 178:18 189:19	126:5	smaller (1) 1:25	sound (1) 42:16
164:6 166:6	63:19,21 73:4 103:9	138:1,23 140:20	separately (1) 179:9	signal (2) 166:19 171:9	smallest (2) 16:24 17:22	source (3) 3:22 47:9
rss000 (1) 163:7	143:24 146:9	141:23 142:5,14	september (6) 36:9	signature (1) 19:2	smallscale (1) 25:10	153:15
rules (1) 63:13	147:12,16 148:24	143:19 144:9,12	67:24 81:17 83:13	signed (5) 18:20 19:4,9	smoke (3) 53:24 85:5	sourced (1) 163:10
run (3) 85:2 112:9	149:1 151:7 152:2,3	145:4,7,13 146:11	84:4 198:11	87:1 145:4	183:18	sow (2) 131:3,16
139:2	167:20	147:15,19 149:5	series (1) 185:16	significant (9) 17:1	sol (3) 124:9,9 158:19	sowing (1) 131:25
running (1) 12:23	scotland (3) 6:6 79:15	151:22,24 152:13	serious (6) 166:8 178:25	139:9 145:25	sold (7) 34:16 71:12	sown (1) 131:17
	80:7	154:7 155:13 157:14	179:1 184:3,7,10	147:21,21 166:20	111:17,18 169:14	speak (4) 49:7 63:4,5
	scottish (2) 2:2 80:20	158:4,17,19,25,25	services (2) 31:18 143:1	169:2 171:10 178:21	179:18 204:15	207:25
	159:6 161:2	162:1,5,6,23,24 163:2	set (6) 52:8 54:9 58:16	silicate (3) 27:2 73:14	sole (1) 91:9	speaking (2) 41:5 56:6
	164:3,6 165:1 166:21	166:16 168:16	61:10 163:6 189:16	107:22	solely (1) 29:15	special (1) 27:15
	169:6 171:14 175:3,10	sets (3) 16:13 32:17	46:15	silver (3) 143:22 147:11	solicitor (3) 131:10	specialist (3) 5:17
	176:25 177:2	setting (1) 88:14	settling (1) 141:1	175:22	132:20 135:16	165:11 203:20
	178:1,4,11 179:4	several (4) 40:11 59:2	several (4) 40:11 59:2	similar (11) 6:2 27:2	solicitors (4) 133:21	specialists (1) 86:16
	182:5 183:21 184:4	63:18 156:4	sfs (2) 92:8 106:17	53:16,19 54:22 55:11	135:18 176:16 177:19	specific (12) 2:12 7:21
	185:8 187:6	shafted (1) 195:13	shall (1) 129:5	73:25 74:7 90:13	solstice (30) 112:23,25	16:15 24:14 41:7
	189:14,21,24 190:5,12	share (2) 129:8,21	share (2) 129:8,21	91:17 98:9	116:5,8	59:14 76:11 80:12
	191:24 192:20 195:22	sheathing (3) 73:14	sheathing (3) 73:14	similarities (1) 74:9	119:2,5,9,10,15 120:2	87:21 144:2 151:24
	196:22 197:11 201:2	75:14 107:17	shed (2) 171:13,20	simon (9) 66:9,21	121:11,20,23 123:6	154:17
	203:23 204:2,18	sheet (1) 204:25	shes (1) 205:20	67:4,22 86:1 87:5	124:9,10,21,24 129:9	specifically (7) 45:10
	206:20	shes (1) 205:20	shocked (3) 20:21	91:24,25 109:22	138:16 152:12	55:18 81:1 112:5
	198:22 200:3	sheds (1) 205:20	165:22 167:24	simons (1) 93:8	158:20,21 160:8 161:9	130:1 164:25 194:13
	186:14	seeing (3) 9:11 112:15	shocking (1) 18:9	simple (1) 161:6	166:11,23 167:5	specification (7) 82:21
	161:10	seek (5) 22:14 69:5	short (12) 10:7 57:24	simpler (1) 162:15	170:24 171:13	83:6 85:1,12 164:23
	3:20 16:19 23:5 26:13	76:7 164:11 175:17	59:5 86:8 117:21	simulate (1) 62:22	soltop (1) 158:7	165:9,10
	32:2 47:1 134:9 203:5	146:19	131:1 179:25 180:7	simulation (1) 62:22	solution (6) 35:18	specifications (1) 82:22
	sections (2) 5:2 77:15	seem (2) 115:4 194:13	183:14 205:21	since (15) 26:16 32:14	110:22 138:21	specifics (1) 163:12
	sectors (1) 94:20	seemed (2) 181:12	206:18,23	37:12 38:16 42:24	165:12,17 193:17	specified (9) 19:24 20:2
	secured (1) 163:14	199:21	shorter (1) 127:24	47:5,24 62:2,6 111:18	solve (1) 21:16	26:25 51:15,24
	securing (1) 22:13	seemingly (2) 181:7	59:5 86:8 117:21	138:16 154:5 156:23	somebody (3) 20:9	92:12,16 152:25
	security (1) 116:2	182:3	183:14 205:21	165:10 173:22	100:12 149:7	174:22
	see (227) 1:23	seems (2) 115:6 171:11	206:18,23	sincerely (1) 10:2	something (45) 4:22	specifiers (1) 165:11
	2:3,6,14,18 3:1,2,8,15	seen (10) 5:19 24:4,11	should (49) 3:13 6:9 7:5	single (2) 143:21 204:25	6:2 10:6,19,24 11:24	specify (1) 175:7
	4:2 5:10 6:11,24 7:16	33:15 59:20 82:8	13:22 16:21 31:19,20	singles (1) 155:9	18:23 21:18,21 35:20	specifying (1) 79:4
	8:6,14,20 9:5,16,20,23	87:19 120:25 133:3	33:23 41:15 45:20	sir (49) 1:3,9,11,13	39:11 43:16 46:22	spectacularly (1) 78:3
	10:22 11:1,15 14:3,24	151:11	51:9 52:7	1:3,9,11,13	48:22 49:1 52:5	spend (1) 186:8
	15:20,24 16:6 17:12	selfadministration (2)	53:10,13,22,23 54:2	67:11,18,22 8:2,5	58:17 19 64:9 77:8	spent (1) 65:12
	19:2,16 22:15,23,25	186:6,11	62:25 65:3,16,21	7:7,11,18,22 8:2,5	80:19 90:13 92:24	spoke (2) 151:16 187:18
	23:3,6,16,24 26:13	selling (9) 6:17 21:24	74:19 85:16 92:11,16	45:15,19 57:15 58:1,4	93:2 96:10 97:7	spoken (2) 86:10 187:2
	27:3 30:12 31:11,15	56:9 64:15 65:21	106:19 112:2 115:2,9	117:11,13,23,25	109:18 126:18 127:22	sponsor (1) 111:6
	33:11 34:5 36:13	142:17 143:6 169:23	116:8 119:5 120:13	170:16,19	136:1 140:5 156:9,13	sponsored (2) 101:14
	37:8,15,17,24 39:19	196:12	134:17 135:8 138:7	171:6,16,19,25	160:1,10 161:10	109:17
	40:19 42:3,10,20	semiexposed (1) 84:25	141:11 155:11,22	172:3,6,10 179:24	171:3,12 176:5 177:16	spotted (1) 169:25
	43:4,9 44:8	send (15) 11:7 35:9	166:6 171:11 175:19	180:9,12 185:10,14	181:22 190:8 197:7	spread (10) 23:22 26:14
	45:12,22,24 46:15	41:15,20 79:6,23	183:23 186:15 187:4	187:17,21,24 188:17	200:25 202:15	32:14 59:18 64:8,12
	47:16 48:3 49:2	102:10 106:5,22	192:6 197:6	205:14,17,19	174:20 204:16	114:3 134:25 135:21
	50:19,24 51:4,17,25	127:9,11 145:2 147:9	199:16 17,24	206:5,9,16,20	171:3,12 176:5 177:16	180:24
	54:3 55:13 56:16	160:13,21	shoulders (6) 57:6,7	208:7,18,23,25 209:3	181:22 190:8 197:7	stacks (1) 162:14
	58:10,11,21 59:6 60:8	sending (3) 52:12 77:11	98:1 175:20 188:7	180:9,12 185:10,14	200:25 202:15	staff (1) 184:2
	61:3 66:9,14,22	151:11	203:21	187:17,21,24 188:17	174:20 204:16	stage (5) 49:4 50:11
	67:5,22 69:7 70:22	sends (3) 9:18 79:9	shouldnt (5) 11:25	205:14,17,19	174:20 204:16	67:12 134:7 183:25
	72:15,17,21 74:2 75:4	95:10	90:25 155:21 175:19	206:5,9,16,20	174:20 204:16	stages (1) 2:11
	76:14,25 78:7 79:22	senior (6) 81:21 87:5	194:17	208:7,18,23,25 209:3	174:20 204:16	stakeholders (3)
	81:13 84:2 85:18	156:3 182:22 200:23	show (8) 9:19 10:9	172:11,14 173:4 186:2	174:20 204:16	154:3,9,11
	86:17 87:6 89:8,21	202:13	36:17 44:4 81:11	193:20 200:9	174:20 204:16	stance (1) 155:1
	92:13 93:6,17 94:25	sense (3) 166:4 171:6	97:18 107:17 200:11	situations (4) 26:17	174:20 204:16	standard (28) 7:25 8:3
	97:21 103:5,22	195:14	showed (5) 15:1 89:2	31:6 32:16 43:1	174:20 204:16	23:15 71:9
	105:8,11,14 106:6,12	sensitive (1) 182:12	98:17 100:3,3	six (3) 139:15 188:10	174:20 204:16	77:10,15,16 90:11
	107:2,4,13	sent (23) 9:8 10:4 13:3	showing (1) 118:9	192:12	174:20 204:16	110:4 124:14 125:4
			shown (3) 26:18 32:16	sixpage (1) 78:19	174:20 204:16	126:6,6 127:25 129:9
				sixth (1) 192:11	174:20 204:16	135:1 141:16 142:8
					174:20 204:16	152:18,20 159:8
					174:20 204:16	166:15 167:4,13

170:25 171:5,8,12	167:14,16 171:9 195:3	suggesting (2) 122:1	sw1 (1) 87:8	106:5,9,10,11 120:4	117:1,5 119:25 121:12	178:22 196:9
standards (1) 146:1	202:21,24	156:19	sweep (1) 205:15	145:12 154:20 155:3	123:20,22 124:6	200:15,17 201:7,9
star (1) 116:13	street (3) 147:5	suggestion (1) 199:16	sweet (3) 195:20	157:16,21 171:24	125:2,2,5,15	text (20) 1:25 8:13
start (7) 66:8 81:6	165:9,13	suggestions (2) 76:4	196:4,5	192:15,23	126:10,23,25 127:14	12:14 68:7 69:17
95:24 145:17 147:10	stress (5) 182:23 198:17	205:24	swept (1) 91:15	technology (21) 20:6,14	129:6,19 130:11	71:22 77:15 82:1 87:9
178:17 198:22	199:1,18 203:10	suggests (4) 11:23	swift (5) 34:20 61:2	21:13 54:11 59:1	131:22 132:1,6	102:24 105:16
started (9) 78:11 83:16	stretching (3) 200:21	14:15 30:24 74:6	92:1 93:7 101:6	110:5,7 129:12	134:7,9,18,19	106:15,23 107:4 109:3
108:13 139:9 168:2,4	201:18 202:10	suit (3) 35:17 106:18	sympathies (1) 208:2	166:16,17 167:4,14	135:2,25 136:4,8,17	141:18 142:13 146:14
176:7 181:4 204:22	strings (1) 31:18	107:25	system (63) 7:17 20:24	170:25 171:5,8,12	137:1 138:9,13,15	150:18 163:18
starting (2) 50:8 67:23	striving (1) 21:16	suitability (14) 19:16,24	22:2,20,22,24	180:19,20,23 200:16	139:14	thank (34) 1:13,16
starts (7) 12:24 46:7	strong (1) 142:13	79:13,20 80:11	26:21,24 27:24	201:8	141:4,13,13,16,21	8:2,5 35:25 45:19
72:15,16 113:20	stronger (7) 131:5	81:15,25 82:7	28:9,22 29:10 32:6,25	telephone (2) 46:10	142:2,8,10,11,11,19,21,22	57:12,19,22 58:4,6
118:20 126:12	132:11,13,16,21,24	87:13,18,20 90:19	33:2 36:15,16 38:14	126:17	143:4,9,13,21 144:6,9	95:15 117:16,19,24,25
stated (3) 25:21 46:12	175:14	98:3 103:8	48:11 51:11,14,23	telling (4) 102:1 178:17	145:25	118:2 179:24
86:16	strongly (1) 183:13	suitable (30) 12:14	53:7 55:17 59:15	190:7 207:4	147:21,22,24,25	180:3,12,14 188:17
statement (13) 22:3,6	structural (3) 63:1	13:23 14:18,19,21,22	60:15 65:17 70:24	temperatures (2) 113:7	148:5,20 149:13,15	206:15,16
25:16 29:18,20 32:20	79:11 98:5	26:17 31:6 32:15	72:13,20 73:11,15	114:19	150:3,7,14,20 151:18	208:5,6,8,18,21,23,24
34:2 66:16 94:7 157:5	structure (5) 48:10	42:25 66:17 69:8	75:6,8,12 76:11,15	temps (1) 114:18	152:9,18 154:17,23	209:3,5,7
160:5 179:5 198:14	68:18 73:2 76:17	75:16 76:10 80:22	77:2,9 78:5 89:2,4	ten (8) 82:11,13,21	156:1 157:1,3,3,17,24	thanks (1) 137:21
statements (7)	187:14	89:20,24 90:9,22,22	90:3 101:21 107:23	101:7,20 205:25	159:3,7,9,17,21	thats (138) 4:22 7:21
53:16,17 54:23	structures (2) 48:7 78:2	102:19 105:4 106:16	108:2 118:10,15	206:1,4	160:3,6,21 161:23	8:3 12:19,20 13:5,10
55:10,15 177:8 178:25	struggle (1) 60:20	112:14 155:10 160:2	128:18 133:11	term (2) 72:23 131:1	162:3,5,8	14:2,9 16:1 17:19
states (2) 32:21 47:13	struggled (2) 159:24	165:25 191:23 192:7	136:4,5,8,17 139:3	terminated (5)	163:12,14,16,23	25:2,6,7 26:7 30:15
status (2) 36:12 126:24	165:23	207:23	141:6,12 158:24	134:20,22 137:1	164:10,22 165:23,24	33:20 35:11 37:20,21
stay (1) 56:18	struggling (5) 110:13	summarise (1) 172:14	159:2,7 175:18 205:10	182:17 198:8	166:12 167:21,21	38:17 40:8,25
stayed (1) 71:21	111:10 116:15 149:19	summary (3) 8:15 43:4	systems (9) 36:10 55:4	termination (3)	172:18 174:13	41:7,11,21 42:17 43:2
staying (1) 58:7	186:11	144:10	60:18 62:15,16	136:18,24 182:17	179:6,16 180:21,24,25	48:5,8 50:20
steam (1) 17:25	stuart (1) 61:13	supalux (1) 207:20	63:23,24 65:10 103:13	terminology (4) 24:4	181:15,15,17,18,20,21	52:1,23,25 55:12
steaming (1) 184:14	stuck (1) 5:8	superiors (2) 30:22		90:11 108:13 171:24	195:21	56:22 57:13 62:11
steel (31) 7:17 8:7,9,19	studies (1) 62:1	176:10	T	terms (14) 19:11 35:20	testable (4) 37:11,24,24	64:12 69:12 70:1,11
47:8,23 48:6,10 63:1	studs (2) 151:19,20	supplied (3) 19:14,22		41:9 70:2 74:19 97:22	38:2	71:12,18 73:2,11
64:25 65:10,17 68:17	studwork (3) 149:4	30:1	t (1) 116:11	98:4 129:18 133:5	tested (38) 2:11 7:20	76:23 77:13,14,25
73:14 75:14 76:16	151:15,16	suppliers (5) 53:15	table (1) 51:8	139:22 149:11 199:19	23:14 38:14 51:11	78:13 80:23 88:8
78:2 85:23 90:4	stuff (3) 197:9,21 198:2	54:22 55:1,14 69:6	tabled (1) 54:2	200:6,7	60:16 62:20 64:14	89:17,25 90:1,13
98:5,18 107:23	stupid (2) 192:17	supply (5) 40:18 77:21	tactics (6) 131:5	terrace (1) 61:11	68:19 72:5,11,18	91:13 95:6 100:11
108:2,17 118:9 149:4	193:22	120:22 164:21 168:6	132:11,13,16,21,24	terracotta (10) 147:9	73:5,15,21 74:8 75:6,8	101:10 108:5,12
151:16 152:4,5,7,9	subcontractors (1)	supplying (1) 168:20	taken (12) 13:6 56:25	150:3,7 152:9 157:4	77:2 85:6 86:8 101:21	111:20 113:9 114:7
steelwork (1) 149:8	165:11	support (29) 30:4,25	64:3 91:15,20 109:19	158:24 159:1,8 174:13	108:9 109:15 110:4	117:10 118:7,12
stell (1) 151:14	subject (16) 19:16,24	57:5 63:2 64:24 69:5	122:16 126:9 137:15	179:16	124:1 136:17 139:3	119:15,23
step (3) 116:25 166:19	20:1 34:23 37:3 39:9	76:15 85:21 90:3	154:4 179:13 199:10	test (250) 4:14 5:16	141:6 156:21 157:8	124:15,16,19 125:1
171:10	44:12 53:5 66:11	120:24 121:24 129:14	takes (1) 188:9	7:12,21 8:8 14:22	159:7,10 165:21	127:18 134:14
stephen (5) 126:14,19	102:15 106:12 113:21	131:11 132:20 144:20	taking (6) 17:16 130:19	16:14,15 20:8,9,10	168:25 169:14,22	135:17,18 137:2
133:18,24 138:6	153:25 162:21,22	158:23 165:4,8 166:18	178:13,14,20 199:19	21:8 23:15,17	173:13	138:24 139:19,24
stephens (1) 137:24	182:13	167:14 171:9 173:21	talk (10) 25:25 39:21	24:6,17,22 25:11	testing (63) 24:18,20,25	142:20 143:10 144:17
steps (4) 130:19	submitted (1) 185:19	179:7 184:20 189:9	46:6 57:17 97:2	27:23 34:1,2 35:21,23	25:7,7,7 38:19,23 39:2	146:20 147:15 148:7
178:13,15,20	substantial (2) 174:2,11	200:22 201:19 202:12	109:10 116:14 136:1	40:15 44:25 45:9	52:17,22,23 54:6,17	151:9 152:21 153:1
steve (8) 61:8 86:1,3	substantiation (2) 56:8	203:15	168:12 187:8	47:12 48:10,12,14,15	56:7 58:8,25 66:15	154:14 155:20
95:12 100:9 140:18	105:20	supported (2) 35:22	talked (4) 92:5 99:18	54:25 55:3,20 57:4	67:13 70:22 92:7	156:22,25 158:8,11
145:6 155:1	substantively (1) 105:14	99:25	119:24 147:23	59:11,23 60:2,7,10,15	99:23 110:24 111:23	159:4,20 164:13 165:6
stevenage (1) 64:21	substrata (1) 98:13	supporting (4) 2:21	168:12 187:8	62:14,22	112:14 118:23 120:6,8	167:1,2 169:19
still (27) 9:20 10:4 38:5	substrate (21) 7:13	32:12 62:3 164:24	talks (2) 111:13 167:13	35:9,14 46:10 50:3	121:4 126:16 127:22	171:4,16 172:9,12,25
41:15,19 46:14 48:18	26:21,23 28:10	supportive (1) 197:15	46:6 57:17 97:2	55:16 97:16 100:7	129:12 140:9 142:17	178:16 179:9,11,23
51:20,21 54:16 59:25	51:13,23 72:12,19,24	supposed (3) 64:4,4	109:10 116:14 136:1	122:2 150:7,8,8,9	143:24 147:11 148:2,4	181:6 182:19,21,25
68:1 71:23 78:4 92:3	73:13 75:9 77:5 92:8	118:13	168:12 187:8	167:4 169:18 171:15	149:2 151:7,15 152:2	190:19,25 191:1
114:20 129:17 141:5	98:7,18 107:11,20	sure (24) 5:15 12:3,4	talked (4) 92:5 99:18	187:10 188:2 198:3	153:5,8 155:22 160:6	193:14 194:3,17
147:24 153:15	108:3,11,14,18	14:14 26:4 31:19 36:4	119:24 147:23	201:4,6 206:10	161:19 162:22 164:7	195:16 196:24
154:17,18 155:18	substrates (2) 80:5 92:5	54:11 96:9,14 99:3	tall (5) 36:22 37:18,20	talks (2) 111:13 167:13	166:14 167:13 168:3	197:1,5,20 201:9
156:19 167:22 183:14	success (3) 53:8 114:3	138:7 161:1,11 169:8	143:6 194:18	76:1,15,18,20,21	169:2 170:24 171:8,11	202:20,23,24 203:5,18
200:19	146:24	170:20 183:14 184:8	119:24 147:23	77:22 80:1,16 81:8	174:2,12 176:12	208:3,6 209:1
stop (12) 52:17,22 54:6	successful (16) 41:8	194:6,8,10,10,16,17	tasked (2) 92:21 93:19	82:3 85:20,24 86:7	181:5,14,25 186:14	themselves (5) 30:3
56:7 58:7 65:16,21	48:9,15 62:3	surely (1) 4:24	tasks (1) 186:8	87:23 88:23	tests (52) 7:11	109:19 175:1,9 176:1
104:10 112:13	101:18,19 123:24	surface (5) 23:22 59:18	taylor (2) 61:13 159:8	89:3,10,11,12,13	20:4,12,14,15 23:18	thereafter (2) 49:23
117:11,13 203:23	125:16 140:9 147:8	128:19 135:20 180:24	team (13) 66:3 95:19	90:2,5 92:12,17	24:14 25:9,10	156:10
storey (4) 3:11 78:22	148:21 149:11,15	surfaces (1) 29:15	96:21 106:5,10,10	97:16,22,22	38:14,16,18,18 47:2,5	thereby (1) 143:5
79:4 81:3	150:20,22 161:16	surprise (1) 207:3	108:4 109:23 157:16	98:10,14,17,19	48:1 53:11,24,24	therefore (18) 2:22 4:9
story (7) 36:6 54:1,17	successfully (3) 32:24	surprised (4) 163:11	188:6 189:5,19 204:17	100:2,14	59:21 70:12 74:12	24:8 30:6 35:5 40:13
56:3 94:6 179:19	108:10 173:13	199:9,12 207:11	teams (3) 53:13 65:16	101:9,11,12,15,17,23	78:2 80:8 88:25 97:18	53:21 61:11 80:16
200:18	suffering (2) 182:23	surrounding (4) 28:24	204:23	102:22 103:1	100:19 108:17 112:6	97:3 103:11 104:12
straight (1) 18:14	203:10	33:1 80:22 163:12	tech (1) 197:14	107:16,18 108:10,25	113:1,5,6 114:23	115:1,9 116:19 141:1
straightaway (1) 46:13	suggest (5) 12:6 103:20	susan (2) 185:17 188:25	technical (28) 9:9 31:18	109:4,9,12,12,15,17,21	117:2 124:25 125:1,5	143:22 175:14
strategy (15) 35:12	109:1,2 121:13	suspect (4) 47:6 61:17	38:4 41:13 46:11 61:5	110:4 111:2	139:14 147:8	theres (17) 10:11 24:16
55:24 82:23,24 83:3,3	suggested (3) 3:25	80:2 163:22	65:15 66:3 80:12	112:7,8,12 114:6,17	148:21,23 149:11,20	26:1 44:8 70:3 72:9
93:22 100:4 166:18	103:3 114:25	suspended (1) 190:21	81:21 82:25 88:9	115:16,20 116:4	151:12 165:22 168:19	73:9 86:14 104:6

Opus 2 International
Official Court Reporters

transcripts@opus2.com
+44 (0)20 3008 5900

wheresic (1) 114:19	worry (1) 64:10	year (12) 30:9 43:16	121:8 134:19 145:18	176:21 179:7 183:4	99:13 101:9,12	116:3 146:18 176:24
whilst (4) 115:2,9 131:2 165:8	worse (7) 20:13 21:14 34:16 48:2 71:12 93:10 199:11	95:19 96:22 127:17 148:21 157:3 164:8 170:11 192:15 207:5,6	210:3,5	191:10 192:10 194:1 199:11,14	102:11,25 106:7,8 109:8 111:2,4 113:1,1,6,11,12,21 114:6,9 121:9 123:20 124:6 126:13 127:11 130:12,22 133:18 137:6,7,9 138:3 139:4,8,24 140:23 142:2 143:10 145:3 146:22 147:19,24 149:14,20,21,21,22 150:4,4,6,13,21 153:3,20 155:4 157:1,2 158:5 159:6 160:14,22 161:23 162:5,19,20 164:7 172:12 173:23 174:14 176:6 185:15,16 186:25	177:5
white (6) 18:9 95:13 123:10 149:2 151:8,12	worsening (1) 100:17	years (10) 23:6 53:20 56:20 84:13 119:22 129:24 146:3 168:12 182:11 184:12	10 (9) 67:24 72:9 78:22 79:4 81:12 114:21 192:10 209:5,9	180m (4) 173:15 174:6,22 175:8	114:6,9 121:9 123:20 124:6 126:13 127:11 130:12,22 133:18 137:6,7,9 138:3 139:4,8,24 140:23 142:2 143:10 145:3 146:22 147:19,24 149:14,20,21,21,22 150:4,4,6,13,21 153:3,20 155:4 157:1,2 158:5 159:6 160:14,22 161:23 162:5,19,20 164:7 172:12 173:23 174:14 176:6 185:15,16 186:25	40 (8) 3:1 26:18 29:8,13,15 32:16 34:24 43:1
whole (6) 27:5 30:10 192:3,17 193:9,15	worstcase (1) 13:21	yellow (3) 23:6 106:18 108:4	100 (8) 31:19 36:4 96:9,14 138:7 166:10 170:23 171:13	1813 (1) 102:11	113:1,1,6,11,12,21 114:6,9 121:9 123:20 124:6 126:13 127:11 130:12,22 133:18 137:6,7,9 138:3 139:4,8,24 140:23 142:2 143:10 145:3 146:22 147:19,24 149:14,20,21,21,22 150:4,4,6,13,21 153:3,20 155:4 157:1,2 158:5 159:6 160:14,22 161:23 162:5,19,20 164:7 172:12 173:23 174:14 176:6 185:15,16 186:25	4000 (1) 84:10
wholly (4) 6:3 75:22 78:14 98:10	worth (1) 168:12	yet (7) 16:4 46:2 56:25 90:2 92:6 137:23 164:22	1000 (1) 1:2	1857 (1) 114:9	130:12,22 133:18 137:6,7,9 138:3 139:4,8,24 140:23 142:2 143:10 145:3 146:22 147:19,24 149:14,20,21,21,22 150:4,4,6,13,21 153:3,20 155:4 157:1,2 158:5 159:6 160:14,22 161:23 162:5,19,20 164:7 172:12 173:23 174:14 176:6 185:15,16 186:25	400x400mm (1) 119:4
whom (4) 61:13 154:16 156:4 183:11	wouldnt (15) 20:7,7 27:13 33:7 62:9 64:16 71:7 76:16 100:16 112:1 138:12 144:20,22 179:15 181:19	youd (2) 3:22 169:22	102 (1) 117:20	18m (9) 3:11 16:20 26:19 44:13,16 51:11 92:4 96:1 164:25	150:4,4,6,13,21 153:3,20 155:4 157:1,2 158:5 159:6 160:14,22 161:23 162:5,19,20 164:7 172:12 173:23 174:14 176:6 185:15,16 186:25	42 (1) 29:19
whos (1) 184:2	write (12) 30:2 39:5 80:11,14,25 82:4 87:25 106:14 127:13 133:25 146:18 153:7	youll (1) 206:14	1029 (1) 60:25	18metre (1) 193:3	157:1,2 158:5 159:6 160:14,22 161:23 162:5,19,20 164:7 172:12 173:23 174:14 176:6 185:15,16 186:25	420 (1) 206:17
whose (1) 36:24	writes (6) 47:20 88:20 123:1 133:17 173:11 187:1	youre (72) 5:4 11:23 12:17 22:7 27:20 29:6,20 37:17 41:18 44:3 56:9 57:18 58:10 60:13 62:12 64:10 68:1 70:8 71:1 72:23 73:5 74:4,5,12 76:9 81:10 89:23 92:1 94:15 97:11 105:15 107:24 109:2 116:14 117:6 118:22 129:17 136:3 137:18 139:7 140:23 142:15 143:13,17 147:15,20 149:11 155:17 157:7 160:21 171:14,21 180:3 188:11 190:7,7,8,11,21 191:18 192:22 193:22 197:16 198:2,3,14 201:4,6,12 202:2 203:25 208:19	103 (1) 94:8	18metres (2) 75:16 144:5	159:6 160:14,22 161:23 162:5,19,20 164:7 172:12 173:23 174:14 176:6 185:15,16 186:25	430 (3) 206:6,13,19
wide (1) 148:14	writing (10) 4:21 81:19 82:7 92:22 93:1,9 100:12 122:9,11 123:14	yourself (2) 9:12 49:12	1031 (1) 160:16	19 (4) 39:6 123:21 139:4 182:17	160:14,22 161:23 162:5,19,20 164:7 172:12 173:23 174:14 176:6 185:15,16 186:25	436 (1) 209:8
width (1) 115:23	written (16) 5:20 25:24 54:19,21 70:5 78:7 81:16,19 90:18 102:6 103:9 131:20 147:18 150:5 172:16 174:10	youves (1) 135:9	104 (1) 94:8	1930 (1) 93:6	162:5,19,20 164:7 172:12 173:23 174:14 176:6 185:15,16 186:25	45 (1) 131:1
window (2) 114:20,21	wrong (10) 25:6,16 26:7 27:5 28:6 52:11 74:4 128:16 181:12 197:2	youve (10) 23:17,18 37:18 64:8 117:5 133:3 162:11 188:11 193:15 198:13	10mm (1) 116:3		172:12 173:23 174:14 176:6 185:15,16 186:25	46 (2) 94:7,8
winning (1) 40:23	wrote (6) 36:7 53:1 56:2 64:19 156:12 203:14		11 (2) 53:3 93:6		176:6 185:15,16 186:25	476 (2) 59:20 73:21
wintech (19) 39:15,21,22,23 40:2 61:13 65:19 66:5 85:25 86:1,4,19 139:9,13,13,17 144:3 183:1 201:14	x (1) 119:4		1120 (1) 57:23		177:5	47611 (1) 25:6
wishful (1) 152:24	xtratherm (1) 84:17		1135 (3) 57:17,21,25		177:5	4766 (3) 23:18 74:12 180:21
withdrawing (2) 46:3,12			12 (3) 44:10,21 80:7		177:5	48hours (1) 154:20
withdrawn (3) 33:24 45:7 50:13			1208 (1) 45:22		177:5	
withdrawnare (1) 46:3			120a (1) 157:6		177:5	
withdrew (1) 208:22			125 (5) 2:25 5:2,6,8 69:21		177:5	
witness (18) 1:10,12 22:3,6 29:18,20 58:3 94:7 117:24 123:15 157:5 180:11 198:14 206:8 208:17,21,22 209:1			126 (2) 2:25 5:9		177:5	
witnessed (3) 20:10 100:18 101:23			127 (9) 3:1,5,8,10,20 4:23 5:4,7 51:9		177:5	
wonder (1) 170:20			13 (6) 45:22,24 95:11 114:15 121:9 176:14		177:5	
wondered (2) 6:25 44:15			1323 (1) 127:11		177:5	
wondering (1) 171:1			135 (34) 51:11 66:15,19 67:1,8 69:20 70:2,22 79:7 80:13,15,17 81:6 88:18 98:19 114:1,2 127:15 128:5 131:20 133:11 134:10 136:11,22 139:4 141:15,21 142:9 143:5 146:9 148:5,22 173:14 174:4		177:5	
wont (1) 60:17			13501 (1) 73:10		177:5	
wool (2) 61:14 84:18			14 (5) 12:24 79:23 123:2 148:14 194:1		177:5	
woolners (1) 64:21			1401 (1) 130:22		177:5	
worded (1) 24:24			15 (5) 36:19 80:8 113:21,22 195:8		177:5	
wording (18) 3:25 4:6 12:7,8,10 17:3,20 28:7,13 29:22 30:18,21 33:4 43:2,18 90:16 103:3 173:16			1558 (1) 44:10		177:5	
work (29) 11:11 26:8 36:24 37:19 38:19 39:18 40:15 41:5,6 52:3 57:9 65:4 75:2 80:4 87:13 88:9 92:7 97:18 109:3 110:9 125:3 150:23 167:18 168:12 181:19 187:11,21 198:3 200:5			15ktest (1) 53:12		177:5	
worked (6) 67:3 91:13 138:24 152:15,22 185:17			15minute (2) 113:24 114:20		177:5	
working (9) 11:22 59:14 138:21 143:23 146:5 160:2 183:17 184:10,16			15mm (2) 116:4,14		177:5	
workload (3) 187:16 188:4 189:8			16 (3) 96:17 177:5 182:11		177:5	
works (3) 55:3 67:16 196:1			1604 (1) 137:6		177:5	
world (1) 27:14			1606 (1) 13:5		177:5	
worried (5) 64:23,25 104:15,20 122:23			1617 (1) 44:21		177:5	
			17 (6) 101:8 110:23 124:6 191:10 197:1,3		177:5	
			1735 (1) 113:21		177:5	
			1751 (1) 95:11		177:5	
			18 (54) 6:8,16 15:3 35:21 40:7 44:11 45:9 49:13 50:19 53:10 56:8 57:5 58:10,15 61:21 64:25 66:17 69:8 70:19 71:8 74:20 76:10 78:12 79:14 82:14 84:6,12 91:23 92:23 95:5 97:21 98:3 99:21 100:1 102:7 106:17 110:16 118:11,16 139:19 140:2 155:3 165:5 166:7 173:10 175:2		177:5	
			0 (17) 2:20 23:18,22 42:24 71:5,7 74:12 75:10,11 77:6,8 85:3 100:4 180:15,19 181:25 193:1		177:5	
			018 (1) 160:10		177:5	
			022 (1) 160:9		177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	
					177:5	

8414 (40) 8:8 24:22,25
25:10 27:23 34:1,2
38:14,16 51:11,20
54:25 64:7 65:10
69:20 70:2,14,22,23
76:1 80:9,10 88:19
92:7 98:19 99:23
109:15 114:17 124:6
125:14 126:16 143:25
146:9 147:8,24 148:5
152:2,3 173:13 201:7
84141 (10) 2:12 7:12
34:12 47:2 49:19
59:10 80:2 97:17
100:14 108:10
841412002 (1) 23:16
84142 (16) 48:10
60:2,16 76:16 80:3
101:9 109:12 123:22
136:18 139:14 140:9
141:9,19 144:9 149:13
157:4

9

9 (10) 13:4 16:1 81:12
113:12,21 114:9,10
138:3 191:13,17
9000 (1) 170:10
909 (1) 78:25
926 (1) 67:24
92d (1) 29:19