

OPUS 2

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Grenfell Tower Inquiry

Day 65

November 4, 2020

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1 Wednesday, 4 November 2020
 2 (10.00 am)
 3 SIR MARTIN MOORE-BICK: Good morning, everyone. Welcome to
 4 today's hearing. We're going to continue hearing
 5 evidence from Mr Paul Hyett. So perhaps you would ask
 6 Mr Hyett to come in, please, would you.
 7 MR PAUL HYETT (continued)
 8 SIR MARTIN MOORE-BICK: Good morning, Mr Hyett.
 9 THE WITNESS: Good morning.
 10 SIR MARTIN MOORE-BICK: Ready for another day's answering
 11 questions?
 12 THE WITNESS: Yes, sir.
 13 SIR MARTIN MOORE-BICK: Thank you very much.
 14 Right, Mr Millett, off you go.
 15 Questions from COUNSEL TO THE INQUIRY (continued)
 16 MR MILLETT: Thank you, Mr Chairman.
 17 Good morning, Mr Hyett.
 18 A. Good morning.
 19 Q. I want to turn back to the topic, please, of insulation,
 20 and specifically Celotex RS5000.
 21 Could we please turn to {CEL00000416}. This is the
 22 rainscreen cladding compliance guide which was published
 23 in February 2015, as I think you will be able to see if
 24 we go to page 5 {CEL00000416/5}. If we can go to
 25 page 5, you can see the date on that page.

1

1 In fact, you can't, I think, quite, but it doesn't
 2 matter. It is actually dated that day.
 3 Now, if we can go back to page 1 {CEL00000416/1},
 4 please, you can see that it is for specifying
 5 Celotex RS5000 in buildings above 18 metres.
 6 If you go to the next page, page 2 {CEL00000416/2},
 7 please, that says at the very top:
 8 "This document provides guidance on complying with
 9 Approved Document B (AD B2) for external wall cladding
 10 systems fixed to steel frame or masonry constructions.
 11 It provides a step by step guide to an alternative route
 12 to compliance for AD B2 through meeting the performance
 13 criteria set out in BR 135 through testing to
 14 BS 8414-1:2002 or BS 8414-2:2005."
 15 Just there, do you think that, in this respect, the
 16 guide has made a distinction between the linear route to
 17 compliance with ADB, and the alternative route to
 18 compliance through meeting the performance criteria set
 19 out in BR 135 through a full-scale test?
 20 A. I was thinking that, just as you were formulating the
 21 question. It isn't as clear as it should be.
 22 Q. In what respect is it not as clear as it should be, do
 23 you think?
 24 A. "It provides a step by step guide to an alternative
 25 route to compliance for AD B2 ..."

2

1 (Pause)
 2 I think I've got to read it twice or three times
 3 myself, and I still wouldn't get quite to grips with
 4 this. I think I would be turning and asking for help.
 5 But ...
 6 Q. Perhaps I can try the question a different way.
 7 When looking at that little paragraph I've just read
 8 to you, putting yourself in the shoes, as you are
 9 of course asked to do so, of the reasonably competent
 10 architect, would the reasonably competent architect look
 11 at that and think to themselves: well, this compliance
 12 guide is telling me that the product complies with
 13 Approved Document B2 --
 14 A. That is so.
 15 Q. -- but it does so because it meets the alternative route
 16 for compliance through meeting the performance criteria
 17 set out in BR 135?
 18 A. That was the way I took your question, and I took the
 19 question as: does it make it absolutely distinctly clear
 20 that it is the alternative route? I suppose it says
 21 "alternative route" there, actually.
 22 Q. Yes.
 23 A. Yes.
 24 Q. To put the question another way round, would the
 25 reasonably competent architect looking at that, if they

3

1 did look at it, think to themselves: ah, well, this is
 2 not a material which is of limited combustibility and
 3 therefore can be used in satisfaction of the linear
 4 route to compliance?
 5 (Pause)
 6 A. I don't know. It's very difficult for me to answer this
 7 question. I think I would take comfort that this is
 8 telling me that it complies with ADB2. I don't know if
 9 I'd actually interrogate that further. There's the
 10 compliance.
 11 Q. Can we then go to page 3 {CEL00000416/3}, and on the
 12 right-hand side of that page towards the top, you can
 13 see a column and three bullet points or little arrows,
 14 and then underneath those arrows it says:
 15 "The classification applies only to the system as
 16 tested and detailed in the classification report. The
 17 classification report can only cover the details of the
 18 system as tested. It cannot state what is not covered.
 19 When specifying or checking a system it is important to
 20 check that the classification documents cover the
 21 end-use application."
 22 A. Well, that's absolutely clear.
 23 Q. I was going to ask you. That's absolutely clear, is it?
 24 A. Yes.
 25 Q. Right.

4

1 A. May I just make the point, the timing of all this, of
2 course, is very late, because this document was not
3 available, I think, at the time that this product was
4 first proposed.

5 Q. That is correct.

6 A. So an architect who's adopted this product earlier on
7 would not necessarily be revisiting the whole of this
8 conversation.

9 Q. That is correct, but what I want to do is to show you
10 all three pieces of manufacturer's literature on RS5000.
11 This is the latest one we're starting with, you're
12 absolutely right.

13 If we go to page 4 {CEL00000416/4} of this document,
14 again it says in the right-hand column, in the second
15 paragraph:

16 "The fire performance and classification report
17 issued only relates to the components detailed and
18 constructed in figure 4. Any changes to the components
19 listed and construction method set out in figure 4 will
20 need to be considered by the building designer."

21 Figure 4 is set out below it, and you can see the
22 ingredients or the elements of the cladding system which
23 was tested under BS 8414. If you look above the
24 diagram to the middle column, there's a little heading,
25 "The system tested was as follows", in bold, and you can

5

1 see that there are six elements to that, starting with
2 12-millimetre fibre cement panels.

3 Just looking at that, again from the perspective of
4 the reasonably competent architect, is there anything
5 misleading or unfairly presented in this page, either in
6 the right-hand column or the middle column I've shown
7 you?

8 A. I've seen this before and it's absolutely clear to me
9 that this is not the arrangement to which the Celotex
10 was put on the building, and that would be clear to
11 an architect looking at this.

12 Q. Thank you.

13 Let's next go, please, to {CEL00000013}. This is
14 the rainscreen cladding specification guide, also
15 produced by Celotex, but this time in August 2014.

16 A. Excuse me, Mr Millett. It would also be clear to
17 an architect, even before reading that, that any test,
18 any alternative route that involved a test, that test
19 would have to be precisely as per the building.

20 Q. When you say the test would have to be precisely as per
21 the building, do you mean that the elements --

22 A. Yes.

23 Q. -- and the design of the elements hanging together would
24 have to be precisely as proposed for the building?

25 A. Correct, yes, and any deviation from that requires

6

1 specialist advice.

2 Q. Thank you.

3 Now, let's look at this document. This is, as
4 I say, dated August 2014. It's called the rainscreen
5 cladding specification guide, as you can see there.

6 If we go to page 5 {CEL00000013/5}, please, we can
7 see on the right-hand side of the page, third paragraph
8 down:

9 "The fire performance and classification report for
10 Celotex RS5000 only relates to the components detailed
11 above. Any changes to the components listed will need
12 to be considered by the building designer."

13 Then if you look at the left-hand side of the page,
14 you can see rather more information. Under "Fire
15 Performance" in big red letters, it says:

16 "Rainscreen Insulation.

17 "Celotex RS5000 is Class 0 fire rated as described
18 by the national Building Regulations ..."

19 Then below that it says:

20 "Building above 18 metres.

21 "Celotex RS5000 has been successfully tested to
22 BS 8414-2:2005 (Fire performance of external cladding
23 systems: Test method ... meets the criteria set out in
24 BR 135 and is therefore acceptable for use in buildings
25 above 18 metres in height."

7

1 Note the word "therefore" there.

2 "The system tested to BS 8414-2:2005 was as
3 follows ..."

4 And there again you have the six elements of the
5 test.

6 Again, on that document, from the perspective of the
7 reasonably competent architect, is there anything
8 misleading or unfairly presented about the use or
9 potential use of this material on a building above
10 18 metres?

11 A. I think so. I've looked at this before, and the word
12 "therefore" is a problem for me, because the clear
13 implication of that is that this product is okay for
14 buildings of over 18 metres. It's then qualified by
15 a specific test.

16 I believe the manufacturers should make it
17 abundantly clear that their product should be
18 scrutinised with the greatest of care for use -- this
19 manufacturer should make it clear that this product
20 should be scrutinised with the greatest of care for
21 situations over 18 metres. I don't think it's as clear
22 as it should be.

23 Q. Well, I note that.

24 If I were to put Celotex's position to you, I would
25 be saying to you that it is clear because, although it

8

1 says that it can be used in buildings above 18 metres in
 2 height, it then goes on to make it clear in the
 3 right-hand column, as I've shown you, that:
 4 "The fire performance and classification report ...
 5 only relates to the components detailed above. Any
 6 changes to the components listed will need to be
 7 considered by the building designer."
 8 Celotex would ask: well, what's not clear about
 9 that?
 10 A. Well, it would be good if it said, "Celotex had been
 11 successfully tested, da da da da, and is therefore
 12 suitable for use in buildings above 18 metres in height,
 13 provided ..." Then it could be absolutely clear,
 14 "provided". But there's no "provided" about this.
 15 Q. I see.
 16 Before we leave this document, stay on the same page
 17 and look at the top left-hand corner where it says in
 18 big red letters:
 19 "Celotex RS5000 has been successfully tested to
 20 BS 8414-2:2005 (Fire performance of external cladding
 21 systems)."
 22 Just taking that on its own, if that's all you were
 23 to look at, given that that's been highlighted, is there
 24 anything unclear, incomplete or potentially misleading
 25 about that?

9

1 A. No, but we're certainly at the edges in all this. The
 2 moment that the architect is departing from clear
 3 compliance with the linear route in ADB2, I think
 4 specialist advice is needed.
 5 Q. Finally, can we look at {CEL00001240}, please. This is
 6 the Celotex RS5000 product datasheet, and it's dated
 7 1 August 2014.
 8 First, can I just ask you to look, please, at the
 9 big pink banner at the head of page 1, where it says:
 10 "Celotex RS5000.
 11 "Premium Rainscreen Cladding Board.
 12 "(suitable for buildings above 18 metres in
 13 height)."
 14 What would a reasonably competent architect take
 15 from that?
 16 A. Well, that goes to the point I was making perhaps not as
 17 eloquently as I should have earlier, which is that
 18 there's no qualification to this.
 19 Q. Then if we look on --
 20 A. I beg your pardon.
 21 Q. Sorry, do continue.
 22 A. No, it's my fault, I paused.
 23 There's no qualification to it, and so I think the
 24 architect can take comfort from it -- may take comfort
 25 from it.

10

1 Now, it can be argued that the architect should look
 2 further and harder, but I believe that Celotex -- all
 3 manufacturers have a duty, particularly in relation to
 4 issues like fire, to make sure that every assistance is
 5 given to those who will be specifying and making the
 6 right decisions, and this is clearly mis -- I think the
 7 potential here is for this to be misunderstood, and
 8 manufacturers should do their best to avoid that.
 9 SIR MARTIN MOORE-BICK: Do you think the competent architect
 10 would read this as if it said "generally suitable", as
 11 opposed to suitable in specifically tested
 12 circumstances?
 13 A. No, I think generally suitable. "Suitable for buildings
 14 above 18 metres in height", sir, it's not qualified.
 15 I'd like to put it, if I may, into another context
 16 as well. I've mentioned in my report the dangers of
 17 condensing, I would use the word "crushing",
 18 decision-making into such a short time.
 19 When I began my career -- this is not a history
 20 lesson -- the process of developing a design and
 21 specification was very orderly and took longer, or more
 22 time was given upfront. We now have a situation,
 23 through design and build, where there is disorder --
 24 I made that clear in my report -- where later stages can
 25 be done before earlier stages. The presumption would

11

1 have been that they would have been done earlier. So
 2 an architect can end up in a situation where there's
 3 an immense crushing of time, and it's -- I've got to be
 4 careful the way I describe this, but sat here, being
 5 presented with this, it's very easy for me to think,
 6 "Yes, everything here should be read in a very orderly
 7 fashion", but if the architect is trying to deal with
 8 the interior of the building, trying to deal with the
 9 cladding, trying to deal with a range of components
 10 going into the cladding, there's sudden late changes
 11 coming in from the design and build contractor, then
 12 there would be limited amount of time that can be spent,
 13 and it's for that reason it's very important, I think,
 14 that the design team are assisted by those who certify
 15 and those who manufacture with information which is
 16 clear, in the interests of not having terrible outcomes.
 17 SIR MARTIN MOORE-BICK: Thank you.
 18 MR MILLETT: Now, I'm going to show you one or two further
 19 parts of this document. Before I do that, and while I'm
 20 on page 1 here, you can see that in the first part of
 21 the page, first part of the text on that page, there are
 22 five bullet points underneath the sentence:
 23 "With Celotex RS5000 you are specifying an
 24 insulation board that ..."
 25 And the third bullet point says:

12

1 "Has Class 0 fire performance [and then it says]
2 throughout the entire product in accordance with
3 BS 476."
4 Can you help us with what a reasonably competent
5 architect, let's say reasonably familiar with Approved
6 Document B, would understand by that sentence?
7 A. An intensity of spotlight has been placed on these words
8 and terms. At that time, I think an architect would
9 have just taken it as a simple -- most architects,
10 I think -- I can't speak for everyone -- but most
11 architects would have taken it as a simple assurance
12 that the product meets class 0 in its entirety, full
13 stop, it's okay.
14 Q. What does "throughout the entire product" mean in the
15 context of having a class 0 fire performance?
16 A. Well, we've got the surface and we've got the remainder
17 of it. Insofar as this note is concerned, it seems to
18 suggest that the entire product, right through its
19 depth, carries that qualification.
20 Q. Is that comprehensible?
21 A. When it's dissected, probably not, because class 0 is to
22 do with the surface spread of flame, but it certainly
23 seems to give an assurance -- to me it almost gives
24 an assurance beyond a surface spread of flame, but
25 scrutiny and investigation would suggest that that's not

13

1 going to be likely.
2 Q. Is the reference to class 0 there apposite in the
3 context of what then follows, namely fire performance
4 through the entire product?
5 A. No.
6 Q. Can we then just turn on in the document --
7 A. Again, it's misleading, I think.
8 Q. Yes, thank you.
9 Can we turn on in the document to page 3
10 {CEL00001240}, please. We can skip page 2, straight to
11 page 3, where you can see there it says, under the list,
12 where you get the list again of components:
13 "The fire performance and classification report
14 issued only relates to the components detailed above.
15 Any changes to the components listed will need to be
16 considered by the building designer."
17 You can see that?
18 A. Yes.
19 Q. And you can see the system tested.
20 Again, from the perspective of the reasonably
21 competent architect, is there anything misleading or
22 unfairly presented about that statement or sentence in
23 its context?
24 A. Well, no, I can't add any more to what I said earlier,
25 except for I would just ask, I've looked at this

14

1 document before but I don't remember, is that pink
2 banner across every page of the document?
3 Q. You're right it's on page 3. If we flip back to page 2,
4 it is also there.
5 A. How many pages does the document have, sir?
6 Q. Let's look on. I'm not sure there is a page 4. You're
7 asking me a question which electronically I'm not able
8 to answer, but --
9 A. Well, every page we've seen has got that banner on the
10 top.
11 Q. Certainly that's right.
12 A. It seems to me to be reinforcing --
13 Q. There isn't a page 4, I can tell you, so every page.
14 A. Well, the flag-line of this seems to be reinforcing at
15 every point that this is suitable above 18 metres in
16 height.
17 I understand the qualification. I can't add any
18 more to what I said before.
19 Q. Yes.
20 Can I ask you to go then back to your supplemental
21 report, please, at {PHYS0000002/50}, just to give you
22 the context. Let's look at paragraph 2.5.5 there.
23 You're talking here about Studio E's opening
24 statement placing heavy emphasis on its entitlement to
25 rely on the advice and expertise of others:

15

1 "In this respect it mentions within these paragraphs
2 Max Fordham, Exova, Rydon, Harley and Celotex. Of
3 particular importance is Studio E's statement at
4 paragraph 12.17 which I quote as follows:
5 "'Studio E relied on the advice of the appointed
6 specialists and suppliers that the products being
7 considered were suitable for the intended purpose and
8 Studio E considers it was reasonable and appropriate for
9 it to do so."
10 Then if we turn the page to page 51
11 {PHYS0000002/51}, we can see what you say at
12 paragraph 2.5.6. You say this:
13 "Whilst I fully understand that construction
14 involves teamwork between both individuals within
15 companies and across different companies that are
16 independently appointed, in my opinion, an architect
17 cannot in circumstances of failure offer as mitigation
18 the fact that he/she had relied upon, and indeed
19 accepted, the advice of others where that architect
20 should have either known, or routinely discovered
21 through research and/or interrogation, that such
22 information or advice was wrong."
23 Now, just taking that paragraph and applying what
24 you say there to these three Celotex pieces of product
25 literature about RS5000, what approach do you say

16

1 a reasonably competent architect should have taken to
 2 those pieces of literature?
 3 A. Well, I go back to earlier comments, I think, during
 4 this examination: I think that the architect should have
 5 known that they're going down the linear route.
 6 Paragraph 12.7 of Approved Document B2 is absolutely
 7 clear: limited combustibility is required. Therefore,
 8 the architect should be taking great care to make sure
 9 components are going in to the building of limited
 10 combustibility. So the starting point should be that
 11 expectation.
 12 Q. Right. When you say there "routinely discovered through
 13 research and/or interrogation", are you saying that the
 14 reasonably competent architect should have interrogated
 15 each of these three pieces of product literature in
 16 relation to RS5000?
 17 A. I think that is correct, but I don't in any way want to
 18 diminish the criticism I make of Celotex's documentation
 19 or others who should have known better who were involved
 20 as part of the design team. That is all clearly --
 21 that's all my view. But at the same time, the architect
 22 I think should have known that the insulation must be so
 23 compliant and should have taken care to either receive
 24 robust assurances from others or, alternatively, satisfy
 25 themselves through the most careful scrutiny of the

17

1 documentation. But it's a difficult territory.
 2 Q. Do you take the view that the Celotex RS5000 product
 3 literature, read as a whole, makes it clear, or
 4 reasonably or sufficiently clear to the reasonably
 5 competent architect, that the fire performance and
 6 classification data relates only to the system tested in
 7 its exact components and set-up, and that any changes to
 8 the components and construction method would need to be
 9 considered by the building designer?
 10 A. That is the case. It does make it clear, but I think it
 11 demands more scrutiny and attention than it should,
 12 because I believe it -- I think that document sets out
 13 to mislead, actually.
 14 Q. In what way exactly?
 15 A. Well, because it's carrying the banner across -- the
 16 presumption is that the product is compliant, and the
 17 specifier has to interrogate the literature to discover
 18 that actually there are inconsistencies. The
 19 "therefore" is missing, there's no qualification made
 20 early on which should be there, in my opinion.
 21 So, yes, when the architect, when the specifier,
 22 studies the document fully, it should -- anybody
 23 specifying should be able to read that document, that's
 24 clear, and on reading that document they should make the
 25 conclusion that it is not appropriate, that is clear.

18

1 I don't think that it's responsible of a manufacturer to
 2 make that such heavy going -- such hard work. But it
 3 should have been clear.
 4 Q. You say it should have been clear, but you also say that
 5 it was clear to the reasonably competent architect. I'm
 6 just trying to --
 7 A. That's just my --
 8 Q. -- tease out where exactly the line should fall.
 9 A. Yes. Well, I understand, and I have to say that the --
 10 it should be clear to a competent -- the architect
 11 should have read it and it should be clear. The
 12 architect should have read it and a competent architect
 13 would have understood it.
 14 SIR MARTIN MOORE-BICK: I think what you're saying, then, is
 15 that the competent architect should have read it with
 16 sufficient care to understand the limitations imposed by
 17 the nature of the test which is being relied on, but the
 18 manufacturer set out to make it difficult for him to do
 19 that. Is that broadly what --
 20 A. Thank you, yes. Others will interrogate the
 21 manufacturers to what they were doing, but it's
 22 certainly not -- I believe that they should have spelled
 23 it out clearly. Absolutely the case.
 24 SIR MARTIN MOORE-BICK: Yes. Thank you.
 25 MR MILLETT: I see, thank you for that.

19

1 Just to pick you up on one way of putting it put to
 2 you by the Chairman, the manufacturer set out to make it
 3 difficult, whether or not the manufacturer intended
 4 subjectively to do that, do you agree that the objective
 5 effect of what the manufacturer did made it difficult
 6 for him to do that, for the reasonable architect to
 7 interrogate?
 8 A. Yes.
 9 Q. Yes.
 10 Can I just then ask you to look at Dr Lane's view
 11 about this, which is at {BLAS0000026/25}. This is
 12 paragraph E4.1.6 of her report, and she says here:
 13 "I have also explained my opinion that any
 14 difference between the Grenfell Tower rainscreen
 15 cladding system and the system tested in the relevant
 16 supporting fire test evidence means that test evidence
 17 cannot be relied upon to demonstrate compliance with the
 18 provisions made in Section 12 of the ADB 2013, and
 19 particularly if no other supporting evidence is
 20 provided."
 21 Do you agree with that view?
 22 A. Yes.
 23 Q. She also says in the same document at page 34
 24 {BLAS0000026/34}, if we could move on a few pages,
 25 please --

20

1 A. Sorry, could I just go back to that again and just read
 2 it again?
 3 Q. Yes, of course. Go back to page 25. Yes.
 4 (Pause)
 5 A. Yes.
 6 Q. You agree with that?
 7 A. Yes.
 8 Q. Thank you.
 9 Can we then move to page 34, where she says at
 10 E4.3.8, and also table E6:
 11 "This test report therefore does not classify the
 12 inspected as built Grenfell Tower rainscreen cladding
 13 system. It cannot therefore be relied upon to
 14 demonstrate compliance with the provisions made in
 15 Section 12.5 of the ADB 2013."
 16 Do you see that?
 17 A. Yes.
 18 Q. Do you agree with that?
 19 A. Yes, yes.
 20 Q. If we go on to the next paragraph down, she says:
 21 "Further, it cannot be relied upon to demonstrate
 22 that the external wall at Grenfell Tower meets the
 23 functional requirement B4 of the Building Regulations."
 24 Do you agree with that?
 25 A. Yes.

21

1 Q. Does that lead to this conclusion, in your opinion,
 2 Mr Hyett: that Studio E, if they had been acting as the
 3 reasonably competent architect, should not or would not
 4 have allowed Celotex RS5000 to be specified or installed
 5 as part of the rainscreen cladding system at
 6 Grenfell Tower because the components of that system
 7 differed from that described as having been tested to
 8 meet the performance criteria in BR 135?
 9 A. I agree that, and that's consistent with what I've said
 10 in the report.
 11 Q. Do you also think that further testing or a desktop
 12 study or perhaps a holistic fire engineering report
 13 should have been commissioned in order to be able to
 14 assess the rainscreen cladding that was to be specified
 15 for installation?
 16 A. Yes, if they were going to use it, yes.
 17 Q. And that means that there was, as things stood -- is
 18 this right? -- no basis, or no reasonable basis, upon
 19 which Studio E could reasonably have concluded that the
 20 rainscreen cladding system as specified and installed at
 21 Grenfell Tower was compliant?
 22 A. No, I don't think that they could have, I agree with
 23 that. I would have not bothered with any testing, time
 24 wouldn't have allowed it, time would not have allowed
 25 it, and I would have realised that it was a non-starter,

22

1 but there we go.
 2 Q. Is this right: to the extent that Studio E were seeking
 3 to rely on other design and construction professionals
 4 working on the Grenfell Tower project, they were
 5 unreasonable in doing so in relation to the Celotex
 6 material, the Celotex product?
 7 A. Well, I think they've got good reason to be -- I said
 8 this yesterday -- more than unhappy that they'd been --
 9 I used the term, you know, fed a curveball, had
 10 Max Fordham suggest a material which clearly was
 11 unlikely to comply, that's the first point, and I think
 12 they've got every reason to be very unhappy with Exova
 13 for not having pointed it out, having received the
 14 stage C and stage D reports. That's all true. But that
 15 doesn't exonerate Studio E, in my opinion.
 16 Q. We talked about the differences between the system
 17 installed and the system as described in the Celotex
 18 literature as having been subjected to a BS 8414 test to
 19 meet the BR 135 criteria. Do you agree that those
 20 systems were mutually completely different?
 21 A. Yes.
 22 Q. Just to finalise on this point, while we've got page 34
 23 of Dr Lane's report here up on the page --
 24 A. Sorry, that's the system that was in the test against
 25 the system that's been installed?

23

1 Q. Yes.
 2 A. Yes, absolutely.
 3 Q. Yes.
 4 A. Absolutely, yes.
 5 Q. And just to round off on this point, while we've got
 6 this page in front of us, could you please look at
 7 E4.3.6 at the top of page 34 of Dr Lane's report. She
 8 says there:
 9 "I conclude from my comparison that there are
 10 multiple significant differences between the rainscreen
 11 system tested in BS 8414-2:2005 [and she describes the
 12 title of that] produced by BRE Global on 01/08/2014 and
 13 BS 8414-1:2015 +A1:2017 Test on a ventilated Marley
 14 Eternit rainscreen system with Celotex RS5000 insulation
 15 on 30/04/18, when compared with the as built Grenfell
 16 Tower construction."
 17 To the extent that you are familiar with what she is
 18 referring to there, would you agree with it?
 19 A. Absolutely.
 20 Q. Can we then turn to the subject of window infill panels.
 21 When I say window infill panels, I know that you know
 22 what I'm talking about from your demonstration in your
 23 model.
 24 A. Yes. If we're changing topic, I'm going to ask if I may
 25 take my jacket off.

24

1 SIR MARTIN MOORE-BICK: Of course you may.
 2 A. Thank you, sir.
 3 (Pause)
 4 Okay. Right.
 5 MR MILLETT: Is it your opinion that paragraph 12.7 of
 6 Approved Document B applies to products with
 7 an insulating core, such as the window infill panels.
 8 A. Yes, I've made that clear in the report.
 9 Q. Is it your view that the window infill panels
 10 constituted a part of the external wall construction
 11 rather than the window?
 12 A. I believe that to be the case. I think others could
 13 take a different view, but I believe it is.
 14 Q. Let's just look at the NBS specification,
 15 {SEA00000169/145}, please. This is L10, which is
 16 described as "Windows/Rooflights/Screens/Louvres".
 17 I would like to show you paragraph 332 at the top of the
 18 page, "Aluminium windows fixed unit - aluminium". Then
 19 about a third of the way down you will see the second
 20 bullet point, do you see? It says:
 21 "Panel/facing type: Aluminium faced insulated panel
 22 comprising core insulation, aluminium lining panel and
 23 integrated channel profile around perimeter, fully
 24 air-sealed at edges to achieve minimum U-value of
 25 0.15 ..."

25

1 A. Yes, I've seen that.
 2 Q. Given that that is in the NBS specification for window
 3 infill panels at the windows part of the specification,
 4 how can you explain why you say it's actually part of
 5 the external wall rather than part of the windows?
 6 A. Interesting question. I hadn't thought of it that way
 7 before.
 8 The windows, in the sense of those parts of -- I'll
 9 begin, if I may, with the fact that we've got two
 10 columns, and between the columns there is what I've
 11 described as a ribbon window system, and that's a fairly
 12 well known term throughout the architectural world,
 13 a ribbon window system.
 14 That ribbon window system is a series of windows
 15 with glazing in which are fixed into an overall frame,
 16 I believe that's the way it goes, and within there you
 17 can put multiple windows.
 18 Within that framing system, they've put a solid
 19 infill panel, and behind that panel -- or they put
 20 an infill panel, sorry, an infill panel which is not
 21 glazed. Behind that panel there is a section of wall,
 22 and that is an upstand from the spandrel panel, which
 23 was part of the original building, built back in the
 24 1970s, manufactured off-site, brought to site, placed on
 25 top of the wall, on pins I suspect, and then bolted to

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1 the concrete soffit. So that part of the ribbon window
 2 system crosses a piece of wall.
 3 I think that my interpretation of that was that that
 4 then forms part of the wall of the building. It's not
 5 a window in that sense.
 6 Q. Now, your understanding, as you have just explained it
 7 to us, is that something that would commonly have been
 8 understood by the reasonably competent architect at the
 9 time of the NBS specification?
 10 A. Probably not.
 11 Q. Can you give us an insight into how common the view was
 12 at the time that insulated infill panels such as those
 13 which were part of the windows as per the
 14 NBS specification should in fact have been treated as
 15 part of the external wall construction instead?
 16 A. That I'm afraid I cannot do because I have absolutely no
 17 basis upon which to give any advice there. I've not
 18 questioned others, I've seen no reports about it.
 19 I know of no other circumstances like this, other cases
 20 like it. I have no idea. All I can say is that as
 21 I came to this piece of work, I interpreted it that way.
 22 Q. Can we go to your supplemental report, please, at
 23 {PHYS0000002/38}. We have here paragraph 2.3.47 and you
 24 say here, in the second half of the paragraph, five
 25 lines down:

27

1 "Therefore, a detailed drawing for these elements of
 2 the works was required to show the design principles of
 3 the envelope, to brief the specialist subcontractor for
 4 the cladding, and to indicate the arrangements for
 5 design of the internal window lining and insulation and
 6 packing behind those linings for which the architect was
 7 responsible under Stages E and F1 for tendering purposes
 8 and under Stages F2 and K during the post-novation
 9 period."

10 Now, that's what you say there.

11 Now, in the absence of that detailed design, and as
 12 the NBS specification had shown a PIR insulation for use
 13 within the external cavity, would you think that it was
 14 reasonable for a design and build contractor such as
 15 Rydon to adopt the same type of insulation product
 16 specified for the external cavity for use in the
 17 internal window linings?

18 A. I was trying to read the first part of that paragraph as
 19 well, because you took me in it at the sixth line. May
 20 I read the first part as well?

21 Q. Yes, of course.

22 (Pause)

23 A. Right. Could you ask the question again, please?

24 Q. Yes. Let me try it a slightly different way.

25 Would you consider it reasonable for a design and

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1 build contractor to adopt the same type of insulation
 2 product which had been specified for the external cavity
 3 to be used in the internal window linings?
 4 (Pause)
 5 A. I'm not happy with a contractor drawing his own
 6 conclusions as to what can be used where. The
 7 architect's information with the employer's requirements
 8 made reference to a different arrangement for the window
 9 linings, head, jambs and cills. I'd think that
 10 a contractor should not presume, not make presumptions,
 11 that arrangements shown elsewhere can be applied.
 12 There was a significant switch to those linings, the
 13 plastic cill, jambs and head, that's a very significant
 14 switch on its own, and then the packing insulation
 15 and/or filler material, because it was functioning in
 16 all those ways, behind it. I think that it's
 17 a significant deviation from the employer's
 18 requirements, and authority, for want of a better term,
 19 should have been sought for that.
 20 Q. Thank you.
 21 Before we leave this topic, let me show you
 22 something else within the NBS specification that might
 23 give us a clue. Can we go, please, to
 24 {SEA00000169/243}. If you look at paragraph 235 towards
 25 the foot of the page, you can see that it says,

29

1 "Compressible insulation in gaps", and you can see there
 2 that what is specified is Rockwool and, in the second
 3 bullet point specifically, mineral wool to BS EN 13162.
 4 Would that have been a direction given by the
 5 reasonably competent architect to the design and build
 6 contractor as to what should be used in the internal
 7 linings?
 8 A. Yes.
 9 Q. Window linings.
 10 A. Yes. Yes, sir.
 11 Q. Does that mean that, in your opinion, the reasonably
 12 competent architect would have expected Rydon, or the
 13 design and build contractor, instead of reaching for the
 14 same materials used within the external wall
 15 construction, instead to have used Rockwool in the gaps
 16 on the inside of the windows?
 17 A. Absolutely.
 18 Q. I'm now going to turn to a new topic completely, which
 19 is cavity barriers.
 20 Can I ask you to start, please, by going to your
 21 report at page 110, {PHYR0000028/110}. We can see here
 22 you say at paragraph 3.11.3, and this is in the context
 23 of your indicative approach:
 24 "For the avoidance of doubt this [which is your
 25 indicative approach] should not be taken as a design

30

1 that HKS Architects would adopt."
 2 Is the indicative approach that you have adopted in
 3 relation to cavity barriers an approach that you
 4 personally or HKS as a firm have ever actually adopted
 5 in practice?
 6 A. The exact arrangement that I've developed there? No, we
 7 haven't had a situation like that, so no, we haven't
 8 adopted that exact arrangement.
 9 Q. Why did you prepare an indicative approach?
 10 A. I felt that it would be useful to the Inquiry for me to
 11 test whether the general approach to the overcladding of
 12 the building could have been carried out in a way that
 13 was functionally equivalent to the intentions, that's
 14 the U-value to be achieved, aesthetically similar, so
 15 I thought it would be useful for the Inquiry to see
 16 whether that could be achieved, and in the doing of that
 17 I learned that I was also able to demonstrate the
 18 processes that an architect would go through typically
 19 in solving a problem like that.
 20 Now, there's no cast-iron method statement. You
 21 can't pull a book down off a shelf that tells you how to
 22 do it. But as I said yesterday, or the day before
 23 maybe, we're problem-solvers. We face a new problem,
 24 and every building is a prototype, actually. That's
 25 almost true. You occasionally get repetition, but

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1 almost every building is a prototype. This was
 2 a prototype. They're facing this -- it's a bespoke
 3 design, and so they're going to piece this whole thing
 4 together, and it seemed to me that if I did
 5 an indicative scheme, I would show how close it would
 6 have been possible to get the overall solution to comply
 7 with ADB2 and, secondly, it would reveal the process
 8 that an architect would routinely go through.
 9 In the end, actually, looking back at it, I think
 10 it's the process that has been more revealing and
 11 interesting than the product, because I reported
 12 carefully on the process that I actually adopted to
 13 solve this problem, and I hope that that gives useful
 14 insight, because against that, in section 4 of my
 15 report, I've criticised what was done, but I've also
 16 been able to criticise the way in which things were
 17 done.
 18 Q. Yes, thank you.
 19 Could you explain the role that a review of the
 20 Building Regulations and the associated guidance had in
 21 the preparation of your indicative approach?
 22 A. Yes, I place great importance on this kind of work.
 23 I think at the outset of a project, it's very important
 24 to do -- I think I called it a code review.
 25 Q. You did.

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1 A. It would be wrong of me to say that, at the outset of
 2 every project, an architect must sit down and do a code
 3 review. If an architect's been doing a particular kind
 4 of building repeatedly or parts of a building
 5 repeatedly, some architects are doing high-rise
 6 new-builds all the time, they wouldn't do a code review
 7 because they know the codes. They would of course want
 8 to keep up to date with any changes. If you haven't
 9 worked on that type of building before, a restaurant,
 10 whatever it is, then I think a code review is absolutely
 11 essential, and I carried out that myself at the
 12 beginning, very thoroughly actually, in order to
 13 understand what I would have to be achieving with the
 14 detailed design as I went through it.

15 Q. Now, you refer in your report to the development of
 16 a cavity barrier strategy.

17 A. Yes.

18 Q. And you use the words "cavity barrier strategy".

19 A. Yes.

20 Q. What is a cavity barrier strategy in particular?

21 A. Well, first of all, I developed that term entirely for
 22 this situation, but there are choices from the beginning
 23 as to where you put -- I mentioned this again
 24 yesterday -- the cavity barriers, particularly the
 25 vertical ones, there are choices, and so decisions have

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1 to be made, and the only way I can think of sensibly
 2 doing that is to holistically get the entirety of the
 3 building in the mind, look at all of the different
 4 situations that have to be dealt with, and then piece
 5 together an approach, and there may be some adjusting,
 6 some rationalising, but piece together an approach which
 7 is as clear and as simple as possible that will deal
 8 with every eventuality that is found in the building.

9 Out of that we end up with a thing that's called --
 10 and I remember this right from the beginning of my
 11 career -- typical details and specials. The typical
 12 details will deal with usually 90% of the building, and
 13 then you've got the specials, whatever it might be, the
 14 circumstances which have to be dealt with in an entirely
 15 different way, they've got to be addressed carefully.

16 An architect must be careful to sort out the typical and
 17 then to identify the specials and get them sorted as
 18 well. All of that went into the cavity barrier
 19 strategy.

20 But the big thing -- I'm sorry if the answer is too
 21 long -- the key thing I would like to emphasise is that
 22 I don't think that an architect can apply ADB2 to
 23 individual details of the building. The façades must be
 24 looked at as a whole.

25 Q. Do you take the view that a reasonably competent

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1 architect ought to have developed a cavity barrier
 2 strategy for this project?

3 A. Yes. Either have one or develop one.

4 Q. And very briefly, why is that?

5 A. Because, if you don't do that, you're at great risk of
 6 failing to apply ADB2.

7 Q. Can we then look at your report, please, at
 8 {PHYR0000029/16}, please. I would like to go to
 9 paragraph 4.1.40, where you say:

10 "I note that whilst cavity barriers have been
 11 extensively used in connection with various lightweight
 12 cladding systems of metal and/or composite construction,
 13 Dr Lane has (at paragraph 10.3.39/Figure 10.19 of her
 14 report) advised that the effectiveness of cavity
 15 barriers can be compromised in circumstances where the
 16 rainscreen panel distorts due to heat. That is a matter
 17 that I will leave other experts to comment on: I was not
 18 aware of such potential problems before reading
 19 Dr Lane's report and would not think it appropriate to
 20 criticise Studio E or any other architects who were also
 21 so unaware."

22 Now, on that subject, is it correct that this issue
 23 here is that if the cladding panels deform in heat and
 24 then fall away, then the external cavity essentially
 25 ceases to exist, or at least the spread of smoke and

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1 fire is not hidden from view, and therefore the role of
 2 the cavity barrier becomes non-existent?

3 A. That's correct.

4 Q. Redundant.

5 A. Correct.

6 Q. Right.

7 Is it your opinion that the use of open-state
 8 cavity barriers, which are mechanically fixed and bonded
 9 as you propose in details 3 to 6 of your report -- and
 10 we can go to these if we need to -- as opposed to the
 11 system designed or approved by Studio E, would resist
 12 fire spread for a reasonable period?

13 A. The arrangements that I have shown would inhibit the
 14 passage of fire. This is particularly important around
 15 the windows. So the answer is yes.

16 Q. So you don't think -- and this is in
 17 contradistinction -- that it would be defeated by the
 18 issue Dr Lane has identified, namely that metal cladding
 19 melts or deforms and renders the intumescent
 20 cavity barriers ineffective?

21 A. I'm sorry, I now have greater insight into that
 22 question.

23 I cannot know the answer to that. Much work will be
 24 done on that, more work than has already been done, I am
 25 sure. People like Dr Lane will give very good advice on

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1 that in the future. All I can say is that applying ADB2
2 as it stood at the time in pursuit of satisfying the
3 Building Regulations, the arrangements that I have shown
4 in terms of the positions of the cavity barriers
5 I believe complies with that, and any other
6 arrangement -- well, the arrangements I've seen drawn by
7 Studio E and Harley do not comply.

8 Q. Do you consider that your arrangements would keep the
9 cavity barriers functional for sufficiently long to
10 resist flame spread adequately?

11 A. That is a question I simply cannot answer, because the
12 ferocity of the fire due to the fuel available to it --
13 fires burn at different temperatures. I mean, we can
14 think of 9/11, where a plane with 30 tonnes of fuel,
15 high-octane fuel, launched into the building, that gives
16 an instantaneous fire of the most tremendous heat. That
17 is a different fire to the kind of fire you might get in
18 a living room where pieces of furniture ignite and take
19 a relatively long time to achieve their full heat, and
20 probably don't achieve a heat anything like the first
21 one I described, the 9/11. I was involved a little bit
22 in commenting on that, that's why I know, and I did work
23 on the fire research test station as you know. It's the
24 intensity of the heat and the speed with which that fire
25 accelerates which is the problem.

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1 I have no way of knowing how long the
2 cavity barriers would have lasted in those
3 circumstances. What I can say is that they would have
4 done a better job than what was shown, because what was
5 shown didn't exist in some respects, but I believe that
6 the perimeter of the windows and particularly the jambs,
7 and I don't want to tread on the toes of the specialist
8 fire experts, but it's evident to me that the head and
9 the cill had a level of protection because of the
10 aluminium shelf angles. Now, those don't satisfy ADB2,
11 but nevertheless I've seen them on the building and they
12 remain in many cases reasonably intact. The weakness
13 was the jambs, as the model shows very clearly. There
14 we have the 120-millimetre vertical gap for something
15 like a metre's height.

16 Q. Yes, we're going to come to that.

17 A. Okay, I'm sorry.

18 Q. Thank you for that.

19 Can I ask you to go to {PHYR0000029/73} -- same
20 document, page 73 -- and let's look together at
21 paragraph 4.3.80 there towards the foot of the page,
22 underneath figure 4.56. The context of this is the
23 emails in early November 2013 between Exova and Studio E
24 about cavity barriers.

25 You say here in paragraph 4.3.80, from the fifth

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1 line down:

2 "However, whilst I am aware that Dr Lane has
3 expressed concern in this respect such concern was not
4 widely publicised at the time of preparing tender
5 documents for the 2012-16 Works. Cavity barriers were
6 widely used in such circumstances and I would not wish
7 to criticise Studio E in this respect. The exhibit
8 below from SideRise current website clearly implies that
9 the products are suitable for use with rainscreen
10 cladding systems and there is no qualification to the
11 effect that the products are not suitable for use with
12 metal rainscreen systems."

13 Do you accept, however, that it's not appropriate
14 for a designer to accept the suitability of a product
15 based either on the fact that it's commonly used or on
16 assertions made by product manufacturers without at
17 least a degree of interrogation by the designer?

18 A. Yes, I think that follows, yes.

19 Q. Let's just explore this a little bit further, then.

20 At paragraph 4.4.123 of your report, and this is at
21 page 127 of the same document {PHYR0000029/127}, let's
22 just go to that, and this is in the context of the end
23 of the email run in March 2015 involving Terry Ashton,
24 Neil Crawford and Rydon, you say there:

25 "On 31 March 2015 Mr Crawford emails the following

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1 comment to Mr Ashton [and you give the reference]:

2 "Thanks this was my point as well - metal cladding
3 always burns and falls off, hence fire stopping is
4 usually just to the back of the cladding line. Thanks
5 for this confirmation anyway'.

6 "Again, this shows a lack of understanding of the
7 principles of cavity barrier installations and a
8 repeated mis-use of the terminology through reference to
9 'firestopping'."

10 Do you see that?

11 A. Yes.

12 Q. Now, before I come to a question on that, Mr Crawford,
13 whose email that was, as you say, clarified that email
14 in his evidence to the Inquiry. Can we go to the
15 transcript, please, for {Day10/153:14}. I ask him,
16 having shown him the email:

17 "Question: Now, I just want to focus on the words
18 'metal cladding always burns and falls off'.

19 "Were you saying there that there was no point in
20 installing cavity barriers behind the ACM rainscreen
21 because in the event of an external fire, there would be
22 nothing to hold them in place to seal the cavity?

23 "Answer: Firestopping, you mean?

24 "Question: Well --

25 "Answer: That's specifically what that's referring

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1 to, holding firestopping in place if it fell off.
 2 A cavity barrier would be kept in place."
 3 Then he goes on, on page 154 {Day10/154}, if we can
 4 just flip to that, to say --
 5 A. First of all, sorry to interrupt you, but I don't
 6 understand what's being said there, but we will no doubt
 7 come back to it.
 8 Q. Well, we will. Let's just show you the whole of his
 9 evidence and we can certainly come back to it, or will
 10 do.
 11 Just let me show you page 154. He goes on to say at
 12 line 6:
 13 "It's a poor choice of words, it should have been
 14 'melts and fails and falls off', but that was my
 15 experience, and the reference specifically was to
 16 previous projects where I had been working within -- the
 17 best way to explain it is within a building you have
 18 compartments and you have the façade, which can be
 19 anything from curtain walling or brick, whatever it is,
 20 but the compartment which, you know, in this case would
 21 be an apartment, you have compartment walls that are
 22 lines of fire resistance, and the external wall, it
 23 generally isn't a line of fire resistance unless you
 24 have a boundary issue.
 25 "So what happens in -- if you have a developed fire

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1 scenario, then the compartment itself is protected but
 2 the façade will fail or buckle, melt, fall off, and the
 3 specific reference I made in my witness statement was
 4 where I had been working on a project and it was made
 5 clear to me that that's what happens.
 6 "I think sometimes it's misconstrued. People think
 7 there is a requirement for some level of fire resistance
 8 on the external wall, and there isn't. Basically, in
 9 a fire scenario, they fail, except where you have the
 10 relative boundary issue."
 11 Now, that was his evidence.
 12 Now, just looking --
 13 A. Could you just read that last sentence again?
 14 Q. "Basically, in a fire scenario, they fail, except where
 15 you have the relative boundary issue."
 16 Now, I've shown you a large amount of what he told
 17 the Inquiry.
 18 What is your opinion on the distinction that's being
 19 drawn here and in the emails between firestopping and
 20 cavity barriers?
 21 A. Well, firestopping is defined in ADB2. That's the first
 22 thing. You can look it up in the index, you can find it
 23 in the definitions. I can't remember where, but I've
 24 read it, it's defined. It's also on diagram 33,
 25 I believe that's the correct diagram.

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1 Cavity barriers are also defined. They're in the
 2 index, they're in the definitions, and they're in the
 3 diagram 33. And they clearly have a different function.
 4 The firestopping is to basically fill imperfections
 5 in connection, so that if you have got a concrete floor,
 6 for example, coming up against a brick or block wall,
 7 there may be a gap between the two, that is inside the
 8 building, that will be sealed with firestopping.
 9 Cavity barriers have a different function, and they
 10 are, as their name suggests, for placing inside the
 11 cavities, and the principle there is to inhibit the
 12 passage of fire into the cavity, it's also out of the
 13 cavity, around openings, windows, doors, at the top and
 14 at the bottom, and then at various intervals through, in
 15 order to inhibit or impede the passage of fire, if fire
 16 gets into the cavity, to impede its onward passage.
 17 So they are quite different things and they should
 18 not be muddled up.
 19 Q. When it comes to an external cavity wall, and
 20 particularly the cavity within the rainscreen system, is
 21 there a distinction between firestopping and
 22 cavity barriers?
 23 A. When it comes to an external wall? Well, I described
 24 the relationship between the external wall and the
 25 internal structure.

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1 Q. Yes.
 2 A. I don't remember on diagram 33 seeing any firestopping
 3 actually within the external wall itself. All that is
 4 shown there is cavity barriers.
 5 Q. Do you agree that there is no material distinction
 6 between the effectiveness of a cavity barrier and the
 7 effectiveness of firestopping if the metal cladding were
 8 to fail and fall off, exposing the external cavity?
 9 A. Sorry, could you ask that again?
 10 Q. Yes. Let me try it differently.
 11 Is there a material difference between the
 12 effectiveness of a cavity barrier on the one hand and
 13 firestopping on the other if, in any case, the metal
 14 cladding were to fail and fall off in the event of
 15 a fire, exposing the cavity?
 16 A. Well, there would be a passage round either. So the
 17 answer is if there's no cavity left because one leaf of
 18 the cavity has gone, whatever it's made of, then whether
 19 it's firestopping or a cavity barrier, there will be
 20 a route around it.
 21 Q. If ACM such as the Reynobond PE 55 was going to fail and
 22 fall away in a fire -- and I take your point about it
 23 may depend upon the magnitude of the fire, but generally
 24 speaking -- do you consider that an alternative approach
 25 to the cavity barrier strategy should have been adopted?

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1 A. Well, with respect, Mr Millett, the missing word there
2 is "time". It's the length of time. Everything in the
3 end is going to burn, fall -- you know, the whole
4 building will collapse in the end if the fire is
5 maintained and grows to such intense levels or
6 magnitude, as the term you used. The issue here is to
7 provide protection for the periods that the ADB2
8 guidance gives. That was the requirement that the
9 design team had to comply with.

10 So, yes, the cladding will eventually burn and fall
11 off. Yes, any cavity barriers that are left at that
12 time will be breached, of course. But ADB2 is giving
13 guidance to inhibit the passage of fire for a period of
14 time, and that's for the Fire Brigade to get there,
15 et cetera, et cetera, you know that story. So I think,
16 in a sense, I'm not moved by the fact that the cladding
17 will fall off. Brick walls collapse under intense fire.

18 Q. Coming back to your indicative approach, can you just
19 tell us as briefly as you can what it is about your
20 indicative approach, so far as concerns the
21 cavity barriers, which would give the Fire Brigade more
22 time than they had with the actual cavity barriers
23 actually installed on the building?

24 A. Well, if I may, there's two parts to that question and
25 I'll just be very quick with the first.

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1 The first is the difference with the indicative
2 design that I've shown is that it complies, I believe,
3 with ADB2, full stop. So if there is a fault with ADB2,
4 then that's another issue, but it complies with that.

5 It will take specialists to advise how long against
6 various degrees of magnitude of fire that situation that
7 I've shown may have delayed the fire. I can't qualify
8 my answer with that level of information. I wouldn't be
9 capable of doing the investigations. But I do know, as
10 sure as night follows day, that if you have
11 a 120-millimetre gap that is a metre tall, and you have
12 got fuel both sides of that gap, then the fire is going
13 to move through that gap.

14 If you have a material which has been designed to
15 delay the progress of fire and it is packed in there
16 tightly, which is what it should have been, then the
17 fire is going to be delayed, and therefore the
18 Fire Brigade will have longer to deal with the
19 situation.

20 Q. Would it follow, therefore, the later it would be that
21 the cladding would eventually fail and fall off?

22 A. Exactly.

23 Q. I see.

24 A. And it may be that the fire would have been put out.

25 Again, that's speculation, so others will qualify what

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1 I say, but it may be that the fire would have been
2 delayed sufficiently for the Fire Brigade to have put it
3 out before it got into the cladding. That's something
4 that others will give better advice than me.

5 Q. Can we go to {PHYR0000029/126}. So we're in your
6 report, page 126, and let's look together at
7 paragraph 4.4.121.

8 You are considering here Mr Ashton's reply to
9 Mr Crawford on 31 March 2015, and you have given the
10 reference to that: {EX000000715}. That's the email from
11 Terry Ashton to Neil Crawford of that date, where
12 Mr Ashton says, in the third line -- let's take it from
13 the top, in fact, it's probably better:

14 "This isn't something that would necessarily form
15 part of a fire safety strategy for a building.
16 Therefore, it would not have been dealt with in the fire
17 safety strategy for this building. I agree with
18 Ben Kay."

19 I think he means Ricky Kay of Siderise there, rather
20 than Ben Bailey of Harley, just to make the point:

21 "I believe that a cavity barrier is all that is
22 required in this application. Even if we were to agree
23 with RBKC, it is difficult to see how a fire-stop would
24 stay in place in the event of a fire where external
25 flaming occurred as this would cause the zinc cladding

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1 to fail."

2 Then you go on to say:

3 "This response brings the earlier Exova statements
4 into question [and then you say this] as I cannot
5 understand how the statement below can be reconciled
6 with Mr Ashton's comment above. It seems to me that a
7 statement confirming that the proposed changes 'will
8 have no adverse effect on the building in relation to
9 external fire spread' could not be made without having
10 given due consideration to the external wall's
11 construction."

12 Then you have set out an extract from the Exova
13 fire strategy report, and just to be clear, this is
14 issue 3 of 7 November 2013 at paragraph 3.1.4:

15 "Compliance with B4 (external fire spread).

16 "It is considered that the proposed changes will
17 have no adverse effect on the building in relation to
18 external fire spread but this will be confirmed by
19 an analysis in a future issue of this report."

20 My question is: ought Mr Ashton's comment have
21 motivated Studio E to provide more details as to the
22 cavity barrier strategy?

23 (Pause)

24 A. Yes, I think that's correct.

25 Q. And ought Mr Ashton's comment have motivated or prompted

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1 Studio E to confirm to the TMO and Rydon that there is
2 a concern in respect of cavity barriers staying in
3 place, and thus the fire safety strategy as developed
4 thus far was incomplete and needed further work?

5 (Pause)

6 A. Sorry, when I answered the previous question, I was
7 answering it on the basis that Studio E should have
8 ensured that Mr Ashton had all the information that he
9 needed to answer the question, because I think that
10 there was a lack of clarity on Mr Ashton's part as to
11 how the external wall was to be fabricated.

12 Q. Yes, and should that lack of clarity have prompted
13 Studio E to go to the TMO, its original client, and
14 potentially its erstwhile client as well, and Rydon, its
15 client, to tell them that there was a concern about the
16 cavity barrier strategy?

17 A. Well, Rydon, yes. I prefer not to bother clients too
18 often during a project, but I think that this was
19 certainly a time for everybody to get their heads round
20 the issue.

21 Q. Very good.

22 As an architect, would you reasonably expect the
23 fire engineer to limit their advice to cavity barrier
24 placement?

25 A. I think that they have to be sure that they understand

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1 the entirety of the construction. Having established
2 that, and given general advice, there may be occasions
3 when a specific question is asked, and they might
4 restrict their advice just to that part. But they need
5 to be sure they understand the whole before they begin
6 advising.

7 Q. In the context of this particular email and the emails
8 that surround it, would the reasonably competent
9 architect have expected the fire engineer, in this case
10 Exova, simply to have limited their advice to
11 cavity barrier placement, or to have come back to them
12 and said, "Well, I now need lots of information so that
13 I can now produce my promised future issue and do the
14 analysis of external fire spread on all the
15 information"?

16 A. The architect should have ensured that the work was
17 completed by Exova, or alternatively that somebody else
18 did it.

19 Q. Could we then turn to page 127 {PHYR0000029/127} of this
20 report, the next page, and look at paragraph 4.4.124,
21 where we see Mr Pearson of Exova's email to Mr Ashton of
22 31 March 2015, and you quote from that extensively.
23 I had better read it all to you before coming to what
24 you say about it. He says:
25 "We note that the barrier against fire spread

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1 between floors is provided through the connection of the
2 structural floors to the existing external walls. The
3 existing external walls are expected to provide
4 sufficient fire resistance to prevent fire from entering
5 the cavities at or near floor or ceiling level.

6 "We would not rule out that fire could enter the
7 cavity if there is flaming through the windows.
8 However, if significant flames are ejected from the
9 windows, this would lead to failure of the cladding
10 system, with the external surface falling away and
11 exposing the cavity, eliminating the potential for
12 unseen fire spread. A standard cavity barrier should be
13 sufficient to prevent fire spread between floors while
14 there remains a cavity.

15 "In view of the above, we do not feel that there
16 should be a need for a 2-hour rated fire break in the
17 cavities along the lines of the compartment floors or
18 walls."

19 Then you say, commenting on that email:

20 "Again, this demonstrates to me a fundamental lack
21 of understanding of the principles involved in ADB2
22 guidance with respect to inhibiting the passage of fire
23 into the cavity behind the rainscreen cladding, and
24 thereafter onwards through it."

25 Can you summarise for us what you say is the

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1 fundamental lack of understanding here?

2 A. I think this Inquiry has put a spotlight on the issue of
3 compartmentation when it comes to external walls.

4 We have a compartment. Think of it almost like just
5 a rectangular box. There's the compartment. It's got
6 an internal wall which opens on to the public areas of
7 the building, the stairs, the lifts, et cetera; it's got
8 two side walls which link to the next flat usually; and
9 it's got a floor and a ceiling. So there you have
10 a compartment. The final face of that compartment is
11 the outside wall, and if that wall -- as I was
12 mentioning a few minutes ago -- is sealed to the
13 internal compartment floors and the walls, then you have
14 a sealed box.

15 What was done here was to produce an entirely new
16 condition, which is a cavity outside the building, there
17 wasn't one before, and so we now have the potential for
18 the passage of fire within that cavity itself.

19 I think Ms Menzies suggested in her evidence that
20 the compartment floors should have been carried straight
21 through the external wall to its perimeter. That would
22 be to the back of the ACM.

23 I don't think that that is the way that architects
24 would interpret ADB2 guidance. The guidance doesn't
25 suggest that the compartment wall has to be carried

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1 right to the back face of the outer lining; it suggests
 2 that cavity barriers should be placed in there. I think
 3 that this response from Exova, Mr Pearson, should have
 4 summarised the situation as I've just summarised it, and
 5 indicated that ADB2 requires the arrangement that I've
 6 shown on the indicative scheme.
 7 Q. I see.
 8 A. Now, there may well be shortfalls with ADB2, in fact
 9 I think there certainly are, but that's what is
 10 suggested.
 11 Q. I see.
 12 A. And if I may, an expert organisation like Exova might
 13 have pointed to the weaknesses and the problems and
 14 suggested an alternative route or greater care, but
 15 I wouldn't expect an architect to do that.
 16 I'm sorry, you didn't ask that question.
 17 Q. I just want to be a bit more precise about, and if you
 18 can summarise in a sentence for me, what it is that
 19 Mr Pearson has got fundamentally wrong.
 20 (Pause)
 21 Perhaps you want to look at the second paragraph
 22 down in particular of the quotation.
 23 A. Yes, I'm looking at that.
 24 (Pause)
 25 Well:

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1 "However, if significant flames are ejected from the
 2 windows, this would lead to failure of the cladding
 3 system, with the external surface falling away and
 4 exposing the cavity ..."
 5 The key point here, I think, is where those flames
 6 are going to go. Are they going to go on the outside of
 7 the ACM, or are they going to go to the inside of the
 8 ACM? If they go to the inside of the ACM, there is the
 9 potential for a far greater ferocity of fire. There are
 10 conditions there -- there's a chimney effect, for
 11 a start. It's almost like a bellows. Far greater heat
 12 can be -- and there's fuel inside that cavity. If that
 13 fuel, that is the Celotex, catches fire and is burning
 14 rapidly in that tight area with a plentiful supply of
 15 oxygen through it, it's like a chimney. The impact of
 16 that on the back of the ACM will be considerable.
 17 We talked yesterday about the cuts to the edges of
 18 the trays. We've got the polyethylene which can pour
 19 out inside.
 20 Q. I see.
 21 A. So I think that those are all issues that should have
 22 been in Mr Pearson's mind.
 23 Q. I see.
 24 Can one summarise it this way, perhaps, and I know
 25 we're interpreting a document, and it's not really your

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1 role and certainly not my role to do that, but is your
 2 understanding, from the point of view of an expert
 3 architect, that the basic error here is that he has
 4 confused a flat on fire with a cladding system on fire?
 5 A. I think that that is correct, but I'm ... you see, we go
 6 back and look at words you've written -- "a fundamental
 7 lack of understanding of the principles involved in
 8 ADB2". If I may, I would just like to go back,
 9 "significant flames are ejected from the windows".
 10 Significant flames can be ejected from the windows
 11 without much adverse effect because, as we know from
 12 Mr Torero's advice, and I know this from moving my hand
 13 towards a candle on the dining table, you can move your
 14 finger towards the candle, there is no burning
 15 sensation, not at all, you can travel right to within
 16 half an inch of the candle and then suddenly the
 17 exponential increase in temperature is extraordinary.
 18 The reverse is also true, as Mr Torero told us.
 19 So flames can come out of the building into the open
 20 air and those flames don't do that much damage. It's
 21 when they get into a situation like the cavity with fuel
 22 there is the danger.
 23 MR MILLETT: Yes. Thank you.
 24 Mr Chairman, is that a convenient moment for
 25 a break?

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1 SIR MARTIN MOORE-BICK: I think it probably is, yes.
 2 Thank you.
 3 We will have a short break now, Mr Hyett.
 4 THE WITNESS: Thank you.
 5 SIR MARTIN MOORE-BICK: Usual rules, no talking while you're
 6 out of the room, please, at least about your evidence
 7 that is, and we will come back at 11.40, please. Thank
 8 you very much.
 9 (Pause)
 10 Right, 11.40, please. Thank you.
 11 (11.23 am)
 12 (A short break)
 13 (11.40 am)
 14 SIR MARTIN MOORE-BICK: All right, Mr Hyett, ready to carry
 15 on?
 16 THE WITNESS: Yes, I am, sir, but could I ask Mr Millett,
 17 please, would you take me back to Mr Pearson's quote,
 18 because I'm not happy that I gave a concise and clear
 19 answer on that.
 20 MR MILLETT: Yes, of course. Can we go to
 21 {PHYR0000029/127}.
 22 A. Right. I was concentrating, I think, too much -- may
 23 I speak?
 24 Q. Yes.
 25 A. I was concentrating too much on the second paragraph,

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1 and if I take that from the top down:
 2 "We note that the barrier against fire spread
 3 between floors is provided through the connection of the
 4 structural floors to the existing external walls. The
 5 existing external walls are expected to provide
 6 sufficient fire resistance to prevent fire from entering
 7 the cavities at or near floor or ceiling level."

8 Well, that I don't think is adequate, and it's not
 9 strictly true. The jambs have to be considered equally.
 10 The next sentence says:

11 "... if significant flames are ejected from the
 12 windows ..."

13 Now, I assume that to mean through the windows,
 14 whether the glass is broken or not, but not around the
 15 windows. The key here is that the fire passed, we know,
 16 through and around the windows. This is absolutely
 17 critical.

18 "In view of the above, we do not feel that there
 19 should be a need for a 2-hour rated fire break ..."

20 Well, that's a fair answer to the question about the
 21 cavity barrier, but to say that "We note that the
 22 barrier against fire spread between floors is provided
 23 through the connection of the structural floors to the
 24 existing external walls", that is not adequate, because
 25 if you get that right, that implies that that will stop

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1 fire spreading, but it won't. If the fire goes out
 2 through the jambs, then it's in the cavity and it can
 3 spread between the floors.

4 I think I was unwise in the use of the words
 5 "a fundamental lack of understanding", I am sure
 6 Mr Pearson fully understands, but I think that this
 7 demonstrated a failure in the advice, because he should
 8 have called for, and Exova should have called for, the
 9 complete information on the cavity barriers in order for
 10 them to give the proper advice.

11 Q. Thank you.

12 SIR MARTIN MOORE-BICK: Thank you.

13 MR MILLETT: Thank you very much.

14 Before I continue on to the next topic, which will
 15 be cavity barriers at the head of the window, I feel
 16 I need to correct something that you said earlier and
 17 I perhaps encouraged you in, and this was about the
 18 timing of the publication of the Celotex RS5000
 19 compliance guide.

20 Can we go back to that document {CEL00000416},
 21 because I drew your attention to the fact that it was
 22 dated as at February 2015, and you said, when
 23 considering the compliance guide:

24 "... the timing of all this, of course, is very
 25 late, because this document was not available, I think,

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1 at the time that this product was first proposed ... So
 2 an architect who's adopted this product earlier on would
 3 not necessarily be revisiting the whole of this
 4 conversation."

5 The point that you had made just before raising that
 6 issue was that on page 3 {CEL00000416/3} of the
 7 compliance guide, it was absolutely clear, when you
 8 looked at the right-hand side of the page, page 3, that
 9 the classification only applies to the system as tested
 10 and detailed in the classification report, and that
 11 report covers the end-use application, that's the text
 12 of it.

13 Now, the point I just want to put to you is that
 14 in fact this compliance guide was available in
 15 August 2014, not only as at February 2015.

16 Can we just look at one or two documents just to
 17 make that good.

18 First, please, {CEL00000012}. Now, that is the
 19 rainscreen cladding compliance guide.

20 If we look at the next document, {CEL00001237}, here
 21 is an email from Jonathan Roome to Ben Sharman of Harley
 22 of 6 August 2014, and he says in the second paragraph:

23 "I have pleasure of informing you as of yesterday we
 24 have now launched the first PIR Board To Successfully
 25 Meet The Performance Criteria In BR 135 For Insulated

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1 Rainscreen Cladding Systems, Therefore Acceptable For
 2 Use In Buildings Above 18m In Height."

3 And says he wants to come and launch the product,
 4 and there is an attachment, "Rainscreen Insulation
 5 Launch". That was also provided to Harley on
 6 27 August 2014, and that's {CEL00000006}. Let's just
 7 have a look at that. This is an email of that date,
 8 27 August 2014, from Jonathan Roome to
 9 Daniel Anketell-Jones at Harley, and he is sending him
 10 the RS5000 data.

11 If it's correct that the compliance guide that I've
 12 just shown you was the document that was provided on
 13 those dates and that therefore Harley was provided with
 14 the compliance guide in August 2014, would that change
 15 your view?

16 A. My view in which respect, sorry?

17 Q. Well, you said the timing of this was very late, and
 18 an architect who had adopted this product earlier
 19 wouldn't necessarily be revisiting the whole of this
 20 conversation.

21 So if it's correct that all three documents were
 22 available in August to the architect, instead of just
 23 the two I showed you earlier, but also the compliance
 24 guide, as opposed to February 2015, would that change
 25 your view?

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1 A. Can you give me the date of the employer's requirements?
 2 Q. They were issued to tenderers in November 2013.
 3 A. Well, I think that's the point. The specifier, the
 4 architect in this case, will carry out work necessary to
 5 get documentation completed, and I don't think revisits
 6 unless there's some major alarm or alert. So I wouldn't
 7 expect them to have revisited it particularly.
 8 Q. Can we then go to the topic I wanted to come to, which
 9 is the cavity barriers round the head of the windows,
 10 please.
 11 Before we look at the detail I just want to ask
 12 about the requirement for cavity barriers around
 13 openings.
 14 Can we go, first, please, to Mr Sounes' oral
 15 evidence to the Inquiry at {Day21/73:7}, please. Here
 16 Ms Grange is asking Mr Sounes:
 17 "Question: What was it about these provisions of
 18 ADB that we have just looked at that would suggest to
 19 you that in a rainscreen cladding system you wouldn't
 20 have to provide cavity barriers around openings?
 21 "Answer: Well, the approved document is silent on
 22 rainscreen, it doesn't discuss it, but I believe the
 23 diagram 33 refers to a very conventional form of
 24 construction and not a rainscreen, which is essentially
 25 outside; the cavity is outside, it's vented -- pressure

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1 equalised, if you like -- it doesn't offer any
 2 resistance to flame from the outside or flames coming
 3 around the window opening."
 4 Then he goes on to say, in line 19:
 5 "So I couldn't have -- I would have read that as
 6 unclear."
 7 What is your opinion as to Mr Sounes' reading of
 8 diagram 33 and ADB in this respect?
 9 A. Diagram 33 is not a good diagram. It looks like
 10 a house, so that's the starting point. But I think the
 11 intention is pretty clear. The colours are not clear,
 12 you've got the very light grey for the cavity barrier --
 13 I'm going entirely from memory now -- and you've got
 14 a diagram which is wrongly titled as well, which doesn't
 15 help.
 16 But I think that between the language used, the
 17 words used in ADB2 and the diagram, it is absolutely
 18 clear that the surround of openings should have
 19 cavity barriers to inhibit the passage of fire.
 20 Q. Now, Mr Sounes -- and I'm summarising his evidence
 21 I hope fairly -- said that he essentially left the
 22 matter to Mr Rek of Studio E, whom he thought had
 23 consulted with perhaps Exova, Siderise and Harley on
 24 this.
 25 If that is correct, do you consider that Mr Sounes'

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1 course of action was one which a reasonably competent
 2 architect heading up the design team at Studio E would
 3 have adopted?
 4 A. To leave this matter to Mr Rek?
 5 Q. And others outside Studio E, for example Exova or
 6 Siderise or Harley.
 7 A. An architect carries an enormous amount of information
 8 in their head at the start of a job. Somebody needs to
 9 have their arms around, if you'll accept that term, the
 10 project and understand it. There may be parts of a very
 11 large project that are handed out to another person to
 12 look after, for example the cladding, that could be
 13 done. But somebody at Studio E needed to be able to
 14 report with great confidence that this issue had been
 15 dealt with and dealt with properly. And I think that
 16 actually -- I don't understand enough about the way the
 17 firm was structured, but I would not be happy -- Mr Rek,
 18 I think, was he a qualified architect or not? I think
 19 he came from -- he had been in the country recently,
 20 I think? I'm not sure.
 21 Q. Yes.
 22 A. As an architect who's acted as a partner and a project
 23 architect at various stages of my life, I would want to
 24 be very sure that the person who was looking after this
 25 issue was experienced enough, and I would want to be

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1 satisfied from discussion with that person that they'd
 2 got it right.
 3 Q. Could we then look at your report at {PHYR0000028/62},
 4 please, and go to paragraph 3.8.12 on that page. I'll
 5 read the whole of it to you, because it's only short:
 6 "The window head/concrete floor slab edge
 7 relationship is orthogonal and therefore the detail is
 8 easier, as the following diagram shows. However, and
 9 for the same reasons, it is imperative that the cavity
 10 barrier is located at the very extreme edge of the
 11 cavity so as to inhibit the entry of fire into the
 12 cavity. Superimposed on the diagram is a 'dotted' red
 13 line which shows where the cavity barrier should be
 14 placed in order to comply with the guidance given under
 15 ADB2 Section 9. (Again, I have also shown a continuous
 16 red line which indicates the position that was shown on
 17 the Harley drawings and installed)."
 18 Now, the diagram that you have set out below that
 19 text I've just read to you is figure 3.30. You see
 20 that? And we can see the proposed cavity barrier
 21 position at the head of the window in the dotted red
 22 line, or the dotted red --
 23 A. Could we feed the diagram up a little, please?
 24 Q. Yes.
 25 A. Yes.

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1 Q. We can probably shrink it a little bit so we can see
 2 more of the diagram. Can we do that? That's enough.
 3 The dotted red rectangle there is where you I think
 4 would put the cavity barrier at the head of the window;
 5 is that right?
 6 A. Yes, as close to the window opening as possible.
 7 Q. Yes, and the hard or solid red line is as per the Harley
 8 drawings?
 9 A. That is correct.
 10 Q. Now, if we look at figure 4.49 of your report at
 11 {PHYR0000029/66}. We can see here that you have
 12 extracted Studio E's drawing 1279 (06) 110 00 showing
 13 that a cavity barrier has been indicated at the window
 14 head level; do you see that?
 15 A. Yes.
 16 Q. So that's where you show that.
 17 Then if we go to your supplemental report -- and I'm
 18 sorry to dot around, I need all three together -- if you
 19 go to {PHYS0000005/55}, please, and go to
 20 paragraph 6.4.5, you say there:
 21 "In contrast, Studio E's drawings, as illustrated at
 22 Figure 4.49 [which is what we have just looked at],
 23 showed a cavity barrier arrangement that closed the
 24 cavities at the very edge of the openings formed at the
 25 head of the windows and were thus compliant with the

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1 guidance of ADB2 in this respect (although cavity
 2 barriers were not shown at the sill and jamb positions
 3 of the windows)."
 4 Can you explain, having shown you all of those
 5 extracts, what the purpose of the cavity barrier at the
 6 window head was?
 7 A. Yes. Could we go back to the last of the drawings we --
 8 Q. The last of the drawings, that's {PHYR0000029/66},
 9 I think. Is that the one you want?
 10 A. Yes, and could that be made a little larger?
 11 Q. Yes.
 12 A. Perhaps focusing on the top yellow symbol, the top
 13 cavity barrier. There you are. We can see there that
 14 that cavity barrier is at the very bottom of the cavity
 15 over the window.
 16 It's important to remember here that the cavity over
 17 the window spreads from column to column. There are no
 18 intermediate parts to it -- the spandrel, I beg your
 19 pardon, spreads from column to column, and the
 20 rainshield goes from column to column. So this
 21 condition here is showing the entirety of the gap
 22 between the two columns, and the requirement is to
 23 inhibit the passage of fire into the cavity, where there
 24 may be fuel. Certainly they don't want a fire in the
 25 cavity.

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1 Placing the cavity barrier as close to the top of
 2 the window as possible means that there is
 3 an obstruction to the free passage of fire at that
 4 point, and there is no fuel within the cavity to assist
 5 the fire.
 6 Q. Why does the cavity barrier need to be at the very
 7 extreme edge of the window head?
 8 A. At the extreme edge? Well --
 9 Q. Or as close to the window as it can be.
 10 A. Simply so that there is no part of the cavity that is
 11 easily accessed by a fire, so that all of the cavity and
 12 any materials within the cavity are above the
 13 cavity barrier, which is protecting them all.
 14 Q. Let's then look back at your figure 3.30 at PHYR --
 15 A. Before you leave that figure, Mr Millett, there's
 16 an interesting point on that, as it's blown up.
 17 Q. Right.
 18 A. May I?
 19 Q. Yes.
 20 A. There's a yellow line that we're looking at. The
 21 cavity barrier is shown in yellow. There is a dotted
 22 line running away from the cavity barrier to the right.
 23 Do you see that?
 24 Q. Yes.
 25 A. That is the cavity barrier continuing around the column.

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1 It then meets a vertical dotted line. You can see
 2 "575" is written through it.
 3 Q. Yes.
 4 A. And there are two lines there. They are the vertical
 5 cavity barrier coming down the column.
 6 Q. Yes.
 7 A. The dotted line of the horizontal cavity barrier does
 8 not continue around the column.
 9 Q. Right.
 10 A. It's absolutely key.
 11 Q. Yes.
 12 A. So there's your chimney again.
 13 Q. Yes.
 14 Can we then look at figure 3.30, which is back at
 15 {PHYR0000028/62}, please, which is your, I think,
 16 indicative position of the cavity barrier. We've looked
 17 at that a moment ago.
 18 Is the position in which you have shown the
 19 cavity barrier at the window head the only position
 20 which would meet the requirements of ADB, paragraph 9.3,
 21 or are there any other positions which would also
 22 comply?
 23 A. No, I think it must be there, as close to the edge of
 24 the cavity as possible.
 25 Q. Now, we can see from this diagram that, in the position

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1 shown at figure 3.30 here, part of the cavity barrier
2 would not actually abut the concrete floor slab, but
3 would abut against the continuous aluminium angle in
4 front of the void.

5 A. Yes.

6 Q. Is that correct?

7 A. Yes.

8 Q. Now, Mr Lamb gave some evidence about the efficacy of
9 that arrangement, and I would like to show you the
10 transcript of what he said and then ask you some
11 questions about that.

12 Can we go, please, to {Day38/104:9}. He says there
13 at line 9:

14 "But the window hangs down below the structure. So
15 you wouldn't expect to put a cavity barrier where it
16 can't be backed up by the concrete structure. So, for
17 one, you would have to put it at least at the bottom of
18 that concrete floor slab.

19 "The second thing, as this is a refurbishment, the
20 concrete isn't crisp and flat and straight as it's shown
21 on that drawing. It's quite a deflection. So the
22 aluminium -- this special profile at the head of the
23 window, there would be gaps between that and the
24 concrete. So if it was mounted on that aluminium
25 profile, fire could get behind the cavity barrier, and

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1 you would also have to contend with the cavity barrier
2 sealing over all the fixings. So that appeared to be
3 the cleanest, safest position."

4 If we go over the page to page 105 {Day38/105}, we
5 can see that Mr Lamb is then shown your figure 3.30 by
6 Ms Grange, and at line 21 Mr Lamb says:

7 "Well, as I say, I think he's [you] shown it too
8 low, and he's assuming that the substrate that that
9 aluminium angle is bolted to is flat, which it clearly
10 wouldn't be."

11 Then he goes on to say, in line 25:

12 "I don't think it should be hanging below the
13 concrete, because the fire protection -- the rating of
14 the product relies on a suitable substrate behind it."

15 Then he goes on at page 106, line 15 {Day38/106:15},
16 if we can look at that, to propose a solution. He says:

17 "I think lifting it up very slightly would be
18 better, and then another solution would have to be added
19 to that to protect between the aluminium bracket and the
20 concrete also."

21 Then I'm just going to show you some more passages.

22 At page 106, line 25 {Day38/106:25} he's asked:

23 "Question: So just to be clear, are you disagreeing
24 with me that it would have been possible to do what
25 Mr Hyett is saying?

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1 "Answer: It would be possible to do exactly what
2 he's shown, yes."

3 Then at page 145 {Day38/145:19}, flipping on
4 a number of pages in the transcript to that, please,
5 he's asked there:

6 "Question: -- and had degraded, et cetera, did you
7 ever think about whether you could include something
8 different there, perhaps not mineral wool but a steel
9 angle? So do you agree with me that Approved Document B
10 does envisage that other materials could form proper
11 cavity barriers, including steel?

12 "Answer: Yes, it certainly does. However, if the
13 proposal that we made was acceptable, there's no need
14 for any of that."

15 Then at the next page, page 146 at line 2
16 {Day38/146:2}, he's asked the question:

17 "Question: Well, forget for a moment what Studio E
18 did and whether they picked this up, just in terms of
19 your own work, was it ever considered that there could
20 be a different solution to a cavity barrier in this
21 location? If you were worried about putting something
22 like a Siderise cavity barrier in that location as shown
23 by Mr Hyett, was there ever any consideration to, for
24 example, putting a metal angle as per section 9 of ADB?

25 "Answer: You could have put a metal angle or

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1 a Z-section on the inside of the extruded aluminium
2 angle.

3 "Question: Yes.

4 "Answer: I guess that would be something that could
5 be proposed.

6 "Question: Yes. But no consideration was ever
7 given to that?

8 "Answer: Not as far as I'm aware, no."

9 I have read you a lot of what he said and what
10 Ms Grange put to him about your diagram 3.30, and
11 I would like to understand your opinion about his
12 position as reflected in the evidence I've read to you.

13 Can we go back to figure 3.30, which is the subject
14 of this discussion, at {PHYR0000028/62}. If you need
15 any more of that than this, we can look at it.

16 First, do you consider that Mr Lamb's location of
17 the cavity barrier as shown in the Harley drawing and
18 figure 3.30 as you have shown it was acceptable?

19 A. No.

20 Q. Do you agree that, in order for the cavity barrier to be
21 fully effective, its full width should abut a solid
22 surface?

23 A. Excuse me, I beg your pardon, it says, "Position of
24 compartment floor horizontal cavity barrier". That
25 cavity barrier, to meet that requirement, had to be

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1 within the depth of the compartment floor. I believe it
2 looks like it's within the depth there, but we found
3 plenty of examples where it's not, it's above the
4 compartment floor, but that's the cavity barrier which
5 is dealing with the compartment floor.

6 If they were to put the cavity barrier higher,
7 that's not immediately over the window opening, but
8 higher -- I'm sorry, I'm using my hands to describe
9 this -- then that still left a cavity under that
10 cavity barrier that needed to be protected from the
11 window opening, so a second cavity barrier would have
12 had to have been introduced lower down.

13 Q. Then my question: do you agree that, in order for
14 a cavity barrier to be fully effective, its full width
15 should abut a solid surface, its full width top to
16 bottom?

17 A. Depth, we would use the word "depth", Mr Millett, if you
18 don't mind.

19 Q. No, depth. Should its full depth abut a solid surface?

20 A. Yes, I don't know the answer to that. I qualified the
21 indicative scheme as being one that would form the basis
22 for robust discussions with specialists, that would be
23 the cavity barrier manufacturer, possibly, certainly
24 Exova, and with building control when the ideas were
25 mature.

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1 There may well have been a suggestion that two
2 cavity barriers, one on top of the other, should be
3 used, or a slightly different bracket arrangement, but
4 the cavity barrier I think would perform well, whether
5 fire was attacking the back of it or the front of it or
6 the bottom of it, it's a consistent material all the way
7 through.

8 As I say, I don't offer it as the absolute
9 definitive solution; it's a considered proposal for
10 discussion with experts.

11 Q. If about half the depth of the cavity barrier doesn't
12 abut a solid substrate, as you have shown in your
13 indicative position with the dotted lines there, but
14 hangs below it, would you consider that that would or
15 might risk a compromise of the effectiveness of the
16 cavity barrier?

17 A. Well, there are two issues there.

18 The first is the robustness of the fixing. The
19 cavity barrier has to be connected to something that is
20 going to be reliable, and the aluminium may fail,
21 although, as I say, the evidence is that the aluminium
22 shelf angles were pretty intact. But it's got to be
23 a robust fixing, so that would be a consideration, and
24 we're certainly getting very low on the concrete to get
25 the normal spikes which Siderise use. They bolt those

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1 to the wall and then they impale the cavity barrier on
2 to it. So it's certainly getting low for that, so
3 that's an issue that would have to be discussed.

4 The second point that Mr Lamb made was the lack
5 of -- the fact that the edge of the concrete slab may
6 have fissures in it, may wave slightly. I agree with
7 that concern, but I would point out that, as I showed on
8 Monday, there are some substantial grooves in the
9 concrete columns that needed to be filled, and I've
10 shown a way in which that could have been done. I don't
11 think that any gap between the back of the
12 cavity barrier as shown here and any unevenness on the
13 spandrel panels would have been anything like the size
14 of those grooves.

15 If it did become a concern, and this again is where
16 the kind of conversation I've described with specialists
17 would come in, it's possible that the aluminium could
18 have been placed onto an intumescent strip. It's
19 possible that there may have been conversation about
20 using a steel angle as opposed to aluminium to achieve
21 the barrier in that way. It's possible that a different
22 arrangement could have been made.

23 Q. I am going to cut you off, and I understand all of that,
24 it's all very useful.

25 A. Okay.

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1 Q. Can I just ask you to focus on a very specific point.
2 I'm just asking you: where, as you can see, about half
3 of the depth of the cavity barrier doesn't abut the
4 solid substrate like the concrete here that hangs below
5 it, would that compromise, as designed, the
6 effectiveness of the cavity barrier?

7 A. If it could be securely fixed, I don't think so.

8 Q. Right. Why is that?

9 A. Because the back of the cavity barrier as well as the
10 bottom of the cavity barrier will inhibit the passage of
11 fire.

12 Q. Do you consider the aluminium angle to be a suitable
13 substrate against which to fit the cavity barrier, as
14 you can see is the case in your indicative drawing?

15 A. Ideally not, but the arrangement that I've shown
16 actually indicates on one of the drawings somewhere in
17 my report that -- yes, it's a three-dimensional
18 drawing -- it shows that the angle would be cut at
19 intervals, that's the shelf angle would have a slot in
20 it, for want of a better description, at intervals along
21 its length, and that the cavity barrier's fixing would
22 be directly to the concrete.

23 Q. So --

24 A. So the cavity barrier is not fixed to the angle; the
25 cavity barrier is fixed via its spike, it's impaled on

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1 a spike which is bolted straight into the concrete.
 2 Q. So would that require modification of the aluminium
 3 angle holding the window in place?
 4 A. Yes, they would have to be cut, but not a difficult
 5 task.
 6 Q. Right.
 7 Let me just look and see if we can get this clear.
 8 Can you go to {PHYR0000028/77}, please, so on some
 9 15 pages in this document.
 10 A. There it is. That shows --
 11 Q. That's it?
 12 A. That's it.
 13 Q. I see. So, just to be clear for those watching, those
 14 show, do they, the head details showing the continuous
 15 window bracket modified to accommodate the
 16 cavity barrier supports?
 17 A. Yes, and please bear in mind this is a cut through it,
 18 so it's a section, and you will see the second note
 19 down, "Continuous aluminium window bracket", that
 20 continues all the way along the top of the window.
 21 Q. Would it be necessary to test whether cutting into these
 22 brackets would compromise the strength or effectiveness
 23 of the brackets?
 24 A. No, it wouldn't be necessary to test that at all. As
 25 long as the brackets are bolted to the wall either side

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1 of the spike, which is the thing that the cavity barrier
 2 is impaled upon, as long as the brackets are bolted to
 3 the wall either side of that, there's no further testing
 4 or assessment necessary.
 5 Q. Would the result of the cutting into the aluminium angle
 6 mean that the back edge of the cavity barrier wouldn't
 7 tightly abut the surface against which it's fitted?
 8 A. It would mean that, you are correct. My judgement is
 9 that the arrangement would be sufficient, but I would
 10 want that to be verified by the specialist
 11 fire consultant, and if they couldn't verify it, we'd
 12 have to find -- if they could not verify it and satisfy
 13 building control, having drawn their attention to it,
 14 then we'd have to find another arrangement.
 15 Q. Do you agree with Mr Lamb's comment that, in respect of
 16 your proposed solution, fire could get behind the
 17 cavity barrier because the substrate that the aluminium
 18 angle is bolted to is not flat, because the concrete is
 19 not crisp and flat and straight, as he says?
 20 A. I think the little gaps are going to be so small it
 21 would be insignificant. That's my judgement as
 22 an architect.
 23 Q. Would another solution be to use a mineral wool
 24 cavity barrier here?
 25 A. A mineral wool cavity barrier?

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1 Q. Yes.
 2 A. No, I think the cavity barrier is correct.
 3 Q. What about mineral wool packing to pack out the gaps,
 4 where gaps were left in your solution?
 5 A. Well, I'm not so worried about the gaps, but if that was
 6 to be packed, and it's possible it could be yet another
 7 layer of protection, then I would seek to bolt the
 8 aluminium angle onto an intumescent strip. So onto the
 9 wall goes the strip, onto that goes the shelf angle, and
 10 then the cavity barrier's fixed directly to the concrete
 11 through the slots.
 12 Q. Now, we talked about the aluminium angle here; what
 13 about steel? What about the placement of a steel angle
 14 at the head in order to act as a cavity barrier itself?
 15 A. These were all the sorts of discussions that should have
 16 been taking place.
 17 Q. At what point do you think they should have been taking
 18 place?
 19 A. This is certainly not concept design, so we're not into
 20 stage C, we're not into stage D, but we're into stage E
 21 and F1 here. So before the employer's requirements
 22 documentation was issued, these sort of issues should
 23 have been sorted, and a switch to a steel shelf angle,
 24 not particularly difficult to do, but Harley may well
 25 have said, "We prefer to deal entirely in aluminium, we

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1 don't want to be introducing steel", for whatever
 2 reasons, and asked to find another way round it.
 3 There are a number of ways of solving a problem like
 4 this, but the time to do it is when there's time and
 5 before parties have committed with tender prices.
 6 Q. If the metal angle was to act as a cavity barrier in
 7 itself, would aluminium as a material be permissible
 8 under ADB?
 9 A. No, it's not. ADB is quite specific, and it's a steel
 10 angle.
 11 Q. Or, I think, timber?
 12 A. Yes, and in both cases I think it stipulates the
 13 dimensions, the thickness.
 14 Q. So, in fact, using an aluminium shelf angle as
 15 a cavity barrier itself would be impermissible; is that
 16 your opinion?
 17 A. That's not possible, the reason being that aluminium
 18 melts at a lower temperature than steel.
 19 Q. When it comes to examining the solution at stage E or
 20 F1, would you expect the reasonably competent architect
 21 to have taken the lead in proposing a design solution?
 22 A. Proposing a design solution, possibly not. Ensuring the
 23 design solution is found, yes.
 24 Q. Would you expect the reasonably competent architect to
 25 have engaged the involvement of building control at that

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1 point?

2 A. I don't see building control as part of the design team.

3 I would wish to have my ducks in a row and then go to

4 see building control and say, "This is what we're

5 proposing, this is the basis".

6 Q. What about engaging the client with the question about

7 the solution here? Would you expect the reasonably

8 competent architect to go to his client and explain

9 what's going on?

10 A. I wouldn't expect -- well, the clients that I deal with

11 wouldn't be particularly pleased to have me coming and

12 bothering them with issues like this; they would expect

13 me to design something competently that complied with

14 legislation.

15 Q. It looks --

16 A. I beg your pardon. That client being of course the TMO.

17 Q. Yes.

18 A. And I'm saying that this should be done during that

19 period of time.

20 Q. Yes.

21 A. Later on, a design and build contractor may well be

22 interested.

23 Q. Yes, thank you.

24 Now, it looks from Mr Lamb's evidence that we've

25 looked at that he took a decision to move the position

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1 of the cavity barriers upwards. We saw that, because we

2 compared the extract from the Studio E drawing with your

3 figure 3.30 which showed the actual position of the

4 Harley cavity barrier up --

5 A. Yes.

6 Q. -- and you illustrated it with your hands.

7 Is that change a design change which, in your view,

8 should first have been discussed with the architect by

9 Harley or by Mr Lamb?

10 A. Well, the protocols for that are that the

11 subcontractor's drawings are passed to the architect for

12 comment. If they've got a good relationship going

13 between them, there may well be a phone call on the way

14 or a sketch sent by email, but certainly at the time

15 that the drawings came through, there's an opportunity

16 to comment on it, and that should have been looked at by

17 Studio E.

18 Q. Whether in fact there was or wasn't, is it your opinion

19 that there ought to have been a discussion between

20 Mr Lamb or Harley and Studio E about the change in the

21 design?

22 A. Well, in my mind that follows, Mr Lamb ringing up and

23 saying, "Hey, I'm thinking of changing your horizontal

24 cavity barrier position over the window". Possibly,

25 possibly not. But it's certainly got to be picked up on

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1 the drawing, which he did, he put it on the drawing.

2 Q. Now, let's go to {HAR00003947}, please. This is

3 an email chain in March 2015, as we can see, and the

4 first email on the page here is one from Ben Bailey to

5 Ray Bailey attaching some images. He says, "Still going

6 around in circles", and it's copied to Kevin Lamb.

7 But the one I want to show you is the second email

8 in this chain, which is an email from Chris Mort to

9 Ben Bailey on the same day, 30 March 2015, and he says:

10 "Hi Ben,

11 "I have reviewed the drawings sent over and sketch

12 a proposal to alleviate the issues raised by the BCO,

13 also on the second page of the attachment I have

14 highlighted the weak link so to speak in terms of fire

15 and I think the BCO would have also noticed this."

16 You see that?

17 A. Yes, yes.

18 Q. He goes on to say:

19 "The proposal requires the installation of RH25g

20 90/60 product in two layers one at the head of the

21 window aligning with the compartment floor and the other

22 at the top of the existing up stand, therefore two

23 layers of 60 minutes protection that overall would

24 provide if tested over 120 minutes protection, at the

25 window locations."

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1 A. This is just the heads of the windows, is it?

2 Q. Yes.

3 A. Right.

4 Q. Now, I don't think I need the rest of the email for your

5 view about this.

6 What I do want to show you is the attachment, which

7 is {HAR00003948}, which is a drawing set. Now, this is

8 the first page of the drawing set, where we can see the

9 Studio E drawing, and if you look at the right --

10 A. Sorry, I don't think this is a Studio E drawing.

11 Q. You're right, sorry, this is a Harley drawing. You're

12 quite right.

13 A. Right.

14 Q. If we go to the right-hand side of it, you can see that

15 there is some manuscript.

16 A. Yes.

17 Q. And you can see where the cavity barriers are in red.

18 A. Yes, yes.

19 Q. I want to focus on the second page of this, if I can

20 {HAR00003948/2}. This is a Harley drawing from

21 August 2014, and this is revision E of 3 March 2015.

22 Here we can see that Chris Mort has put a squiggle

23 cloud around the bracket holding the window in place and

24 has put the words "weak link for fire", do you see that?

25 A. Yes, and he is from Siderise?

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1 Q. And he is from Siderise, correct.

2 A. Yes.

3 Q. You can see the cavity barrier location there
4 illustrated on this Harley drawing.

5 A. Yes.

6 Q. Do you consider that there is a weak link for fire in
7 the location identified by Mr Mort?

8 A. For all the reasons that we've been discussing for the
9 last ten minutes, yes.

10 Q. And why is that, can you just explain?

11 A. Because there is a cavity and there's no protection at
12 the edge of the window, in the gap between the window
13 and the concrete.

14 The window here has moved out from the concrete, so
15 out from the face of the building, and my report shows
16 how the previous windows were installed within the line
17 of the concrete, so if you just drop the vertical -- if
18 you take the back of the angle, I think everybody
19 understands where that angle is, that's fixed to the
20 concrete. If you drop a straight line down through the
21 window, through the opening, the original window
22 position was behind that, that's within the concrete
23 line. This has gone outside, and it's now created a gap
24 between the top of the window and the concrete. You can
25 see that. The only filling to that gap or sealing of

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1 that gap is the aluminium, and the aluminium doesn't
2 satisfy the guidance of ADB2. So there is a weak link
3 for fire, precisely as written here, and beyond that
4 weak link is fuel.

5 Q. Yes. Thank you. And the solution that you have
6 identified at figure 3.30 in your report is the solution
7 that you think ought to have been adopted; is that
8 right?

9 A. Yes.

10 Q. Yes.

11 Now, we don't see ourselves any evidence of this
12 email having been forwarded to building control or
13 building control being shown this attachment on which
14 the words "weak link for fire" were indicated at the
15 window head there. That's a matter of evidence.

16 My question is: would you expect a reasonably
17 competent architect to raise this question about the
18 potential here for a weak link for fire with
19 building control?

20 A. Do we know if Studio E ever got this marked-up drawing?

21 Q. No, they didn't, I don't think.

22 A. Well, my answer then is, if they'd have got the
23 marked-up drawing, without a shadow of a doubt.

24 Actually, I wouldn't have even bothered to raise it with
25 building control; I would have sorted it before I went

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1 to building control, full stop.

2 Q. Let me ask the question in a slightly different way:
3 would you expect the reasonable designer, whether it's
4 Studio E or Rydon as the design and build contractor, to
5 have taken this question to building control?

6 A. There's no point in taking the question to building
7 control because it's an unacceptable weak link, and
8 a competent architect or designer, cladding specialist,
9 should know it's a weak link, it's a non-starter. It
10 doesn't matter whether building control -- actually,
11 that's the answer: it doesn't matter whether building
12 control pass it or not. That's the minimum standard.
13 They may have made a mistake. Our job is to comply with
14 the guidance in ADB2 if that's the route we're going.
15 It doesn't comply. So even if the building control
16 officer said, "Fine, you do it", I wouldn't do it.

17 Q. Can we then move on and go to {PHYR0000028/76}. I want
18 to show you figure 3.38 on that page there.

19 We can see on the left-hand side of this diagram
20 here that you have indicated a breather membrane, can
21 you see, at the top left-hand side of the picture?

22 A. Yes.

23 Q. The diagram. It says "Breather membrane" with a pointer
24 arrow with a ball at the end of it identifying where it
25 sits.

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1 You also say, just four lines down from that:

2 "Breather membrane run between cladding bracket &
3 vertical rail and dressed over horizontal
4 cavity barrier."

5 Do you see that?

6 A. Yes.

7 Q. Does the placement of the membrane passing over the
8 outer edge of the cavity barrier have any impact on the
9 functionality of the cavity barrier itself?

10 A. I don't believe so.

11 Q. Let me see if I can just explore that.

12 In order for the intumescent strip on the leading
13 edge of the cavity barrier to be able to expand into the
14 cavity, is it right that it shouldn't have any other
15 building components obstructing that expansion against
16 the back of the cladding panel?

17 A. Again, these are issues for discussion with the
18 specialists, but I don't think -- so the power of the
19 expansion of the intumescent strip in fire would just
20 push the breather membrane straight out and ram it
21 against the back of the surface to which it's seeking to
22 close. So I don't think there would have been any issue
23 there at all.

24 Q. So you don't think that the existence and location of
25 a breather membrane would have inhibited the expansion

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1 of the intumescent strip?

2 A. It certainly wouldn't inhibit the expansion. The issue

3 is whether -- that intumescent strip would expand, full

4 stop. I think it would go snugly against the outer

5 surface to which it's intended to reach. I'm in no

6 doubt about that.

7 Q. Could we then turn to Mr Osborne's evidence. He was

8 Osborne Berry. {Day43/97:14}, please. This is in the

9 context of putting an EPDM in, in order to seal the

10 angle brackets and to stop water leaking down and into

11 the flats. He says:

12 "Answer: You couldn't penetrate the EPDM --

13 "Question: Yes.

14 "Answer: -- with the firebreak or the insulation,

15 so the EPDM was put on and then the firebreak was moved

16 upwards to allow fitting of the firebreak and fitting of

17 the insulation.

18 "Question: When you say the firebreak was moved

19 upwards to allow the fitting of the firebreak and

20 fitting of the insulation, do you mean -- is this on the

21 columns we're talking about?

22 "Answer: No, this is on the horizontal."

23 If we go on to page 98 at line 6 {Day43/98:6}, he is

24 asked the question:

25 "Does that mean that the positioning of the

89

1 horizontal cavity barriers on the tower were slightly

2 higher, rose up ..."

3 Do you see that?

4 A. Yes.

5 Q. To which he answered, "Yes", and then he agreed that

6 they had been moved up from the position they had

7 originally been shown in the Harley drawings. We can

8 see that just from lines 13 onwards.

9 Earlier on in his evidence, Mr Osborne had explained

10 that a sample panel had been constructed for review. We

11 don't need to see it, but that was {Day43/97:25}.

12 Moving on from that at page 99 {Day43/99:2}, if we

13 can go back to that, he says:

14 "Oh, very -- no, early on in the project. Then

15 a sample panel was completed, I believe I was on the

16 mast climber at the time, Grahame was on the

17 mast climber, and several other people, probably eight

18 or ten people, all came up to have a look at what we had

19 done, and then that was agreed that that's where it

20 would be and that's where we worked from, basically."

21 That's what he says.

22 Now, his point is that the cavity barrier had been

23 raised up by about 10 centimetres from the position

24 shown in the Harley drawings. Again, that's page 99,

25 line 23 {Day43/99:23} of the transcript. He also said

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1 that it was either Mr Lamb or Mr Anketell-Jones that had

2 instructed that change. That's page 98, line 24 of the

3 transcript {Day43/98:24}.

4 A. Sorry, that's gone up from the position shown on Harley

5 drawings?

6 Q. Yes.

7 A. So it's gone up even further from the position shown on

8 Studio E's drawings.

9 Q. Well, let's perhaps look at page 99 just to be clear,

10 because I'm conscious that I'm now answering your

11 questions rather than the other way around, so I'll try

12 and help you.

13 A. I beg your pardon.

14 Q. Well, it's not surprising, I'm showing you an awful lot

15 of transcript in order for you to swallow it in one go.

16 The answer to your question is yes, but let's look at

17 {Day43/99:23}. He says 10 centimetres, so he's given

18 the measurement there. Line 25:

19 "Question: Approximately how far from the head of

20 the window was that cavity barrier then, roughly?

21 "Answer: I ... can't remember."

22 Perhaps it's easier to do this by way of a picture.

23 Mr Osborne was shown a photograph, and we can look at

24 that at {HAR00001524}. Just have that photograph up

25 there. That's a photograph of the building during

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1 construction, as we can see, and we can see the

2 cavity barriers in black horizontal and vertical lines,

3 do you see?

4 A. Interestingly, you can also see the slots cut out of

5 them for the vertical channels that are going to be

6 installed.

7 Q. Yes, you can. That's absolutely right.

8 Of that photograph, Mr Osborne gave some description

9 at page 166 {Day43/166:12} of his evidence. If we can

10 just look at that. Go back to page 166 at line 12. He

11 is shown this photograph, and he's asked at line 6:

12 "Question: So in these photographs we get a sense,

13 I think -- is that right? -- of how high above the

14 windows those cavity barriers were; would you agree?

15 "Answer: I do.

16 "Question: So we can see there that they are

17 further away from the windows than allowed for in the

18 drawings?

19 "Answer: Correct."

20 Now, I've given you an awful lot to swallow there,

21 Mr Hyett, and I'm sorry about that, but do you agree,

22 looking at this photograph and the evidence that I've

23 shown you in the transcript, that the cavity barrier

24 actually installed is higher than the position even as

25 shown on the Harley drawings?

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1 A. I believe that that was -- it looks like it from the
2 photographs, but I have also measured on site sample
3 cavity barriers and I found them to be higher.
4 Q. Is that a design change which, in your view, should have
5 been discussed with the architect, the lead architect?
6 A. The installation should be as the approved drawings, and
7 any departure from it should be cleared, so yes.
8 Q. Is it your opinion that that change should have been
9 recorded in drawings?
10 A. When we make changes on site, we sometimes issue a site
11 instruction. That might carry a sketch with it, and it
12 may not be necessary to go back to change the drawings.
13 But the principle of -- but the as-record drawings
14 should show the correct arrangement, the as-built
15 drawings at the end.
16 Q. I was going to ask you, yes.
17 A. If that's what you're going to ask, yes, they should be
18 shown correctly on there.
19 Q. Yes. At some point, whether it's immediately or in
20 production of the as-built drawings, the alteration of
21 the position of the --
22 A. Should have been recorded.
23 Q. -- horizontal cavity barrier should have been recorded
24 in drawings?
25 A. Yes. But more to the point, the drawings are there to

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1 ensure that everybody understands what they're doing and
2 that the building is compliant. A change like that
3 should have been fed back through the architect and back
4 through building control and/or Exova.
5 Q. Would you in principle have been supportive of this
6 mock-up construction of the cavity barrier, insulation
7 and panel placement that seems to have been undertaken
8 by Osborne Berry on site, and then considered by the
9 10 or 12 people or so who had seen it? Would you agree
10 with it?
11 A. No.
12 Q. Why is that?
13 A. Because it departs from the architect's drawings, they
14 should have spotted it departed from the Harley
15 drawings, and it departs from ADB2, and there should
16 have been people there who understood the way in which
17 the design was intended to comply with ADB2 and could
18 have said, "This is just not right".
19 Q. Would consideration of the mock-up need to be had by
20 reference to Studio E's drawings included in the
21 employer's requirements? Would you need to put the
22 mock-up next to the employer's requirements drawings and
23 consider the former in light of the latter?
24 A. I haven't quite got the date of the mock-up in my mind.
25 The mock-up is of course after the employer's

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1 requirements. Was the mock-up done after the Harley
2 drawings had been issued?
3 Q. Yes, it was. It was done on site during construction.
4 A. Well, that takes us back to the comment I made
5 yesterday, which is that the difference between the
6 architect's drawings and the Harley drawings should have
7 been highlighted, and either the architect's drawings
8 should have been corrected or there should have been
9 some authority to depart to the Harley drawings.
10 But either way round, if the Harley drawings are by
11 then in currency, there's where the mistake lies. But
12 if they're in currency and the installation of the
13 mock-up doesn't even comply with those, then that should
14 be raised again.
15 Q. I see.
16 A. So, no, I don't think that the mock-up team would have
17 had one set of drawings from the architects and one set
18 of drawings from Harley. Harley's drawings needed to be
19 right, they were the authority, and it should be checked
20 against them.
21 Q. In your view, should Studio E have been involved in
22 reviewing the mock-up?
23 A. If they're retained, if they're novated, I think they
24 should have wanted to have been there and expressed
25 concern if it was going ahead without them. I think

95

1 that Rydon should have absolutely wanted them there, and
2 shouldn't have contemplated having a mock-up without
3 them there. I don't know whether they were there or
4 not.
5 Q. I think I take it from your last answer but one that you
6 are of the view that constructing a mock-up of this type
7 took place far too late in the process, and when I say
8 "in the process", I mean in the design process.
9 A. Not necessarily. The mock-up can have a whole host of
10 useful purposes. So I'm thinking back to when we did --
11 the last mock-up I saw was the Optus Stadium, and we did
12 that just to get a sense of visually what it would look
13 like, we wanted to do it.
14 Q. Yes.
15 A. There is no reason why all of these problems couldn't
16 have been sorted out from drawings, and indeed there's
17 every reason why they should have been. So it doesn't
18 need the mock-up to sort out the problem; the fact is
19 that the mock-up illustrates that they have -- well, the
20 mock-up illustrates that they've misunderstood the
21 drawing and misapplied the drawing.
22 Q. That's really my point, that if you're going to make
23 a change like this, whether through a mock-up or through
24 a drawing, at this stage in the process, it's too late,
25 because it's too late to address any issues with the

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1 design.
 2 A. Well, they can make a change, but they've got to get the
 3 authority for the change.
 4 Q. Right. And would that authority include taking formal
 5 authority from the ultimate client, the TMO in this
 6 case, or not?
 7 A. No, because it's a technical issue of compliance. The
 8 TMO expect their team to deliver a competent building
 9 that's complying with the Building Regulations. They're
 10 not checking their work. The team had the
 11 responsibility to make sure that it was compliant.
 12 Q. Thank you.
 13 I now want to turn to a set of questions about the
 14 cavity barrier strategy at the jamb condition, the jamb
 15 column condition. You know what I mean by that?
 16 A. I do, yes.
 17 Q. Yes.
 18 Can we start by looking at {PHYR0000028/68}, please.
 19 This is figure 3.33 of your report, "Typical Detail 1 -
 20 Jamb/column interface".
 21 Here, am I right in thinking that you have provided
 22 a detail, a proposed detail, for the jamb/column
 23 condition --
 24 A. Correct.
 25 Q. -- which shows a bespoke-shaped corner piece --

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1 A. Yes, that's correct.
 2 Q. Just to be clear for those listening, it's a piece of
 3 vertical cavity barrier which is to be fixed back to the
 4 structure via brackets to fill up fully the residual
 5 cavity at the window jamb.
 6 A. Yes.
 7 Q. I think you also say that, in the alternative, if you
 8 couldn't do it that way, then you could fill the
 9 residual cavity with mineral wool under compression?
 10 A. Correct.
 11 Q. We also see the proprietary vertical cavity barrier
 12 fixed to the structure via brackets in this diagram,
 13 don't we?
 14 A. Yes.
 15 Q. If we turn to figure 3.27 on page 54 {PHYR0000028/54} --
 16 A. If I may, Mr Millett, that's in the position that I've
 17 shown it as well, that rectangle, and it's not in the
 18 position shown by either Studio E or Harley.
 19 Q. No, I understand that.
 20 If we go to page 54 for the moment and look at
 21 figure 3.27 on that page --
 22 A. Yes.
 23 Q. -- just to be very clear, we can see the location of the
 24 vertical cavity barriers at the window jambs on the
 25 cross-section of a typical floor here, can't we?

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1 A. Yes.
 2 Q. Could you just help us explain by reference to this
 3 figure, figure 3.27, and figure 3.33 that we looked at,
 4 and 3.34 if we need to, why it is that you consider that
 5 two vertical cavity barriers per column are necessary?
 6 A. The first point is the yellow vertical cavity barriers
 7 are only for the depth of the window. They don't go
 8 from floor to floor, they just go from the top to the
 9 bottom of the window.
 10 Q. Right.
 11 A. They are necessary to seal the gap between the window
 12 frame and the column, and as you can see, if we take
 13 flat 3, the corner column, there is two junctions of
 14 windows to the column: there's the window that is on the
 15 façade that is between D1 and D2 columns, and the window
 16 that was on the façade between D1 and C1. So there's
 17 two sets of windows meeting the column. Each of those
 18 junctions need to be sealed with a cavity barrier.
 19 Q. It may be easier to do this by reference to figure 3.34
 20 on page 71 of your report {PHYR0000028/71}, if we can
 21 just turn to that. We may get an even clearer
 22 illustration of that there.
 23 A. Yes, that is correct.
 24 Q. Could you just point out to us on that diagram what it
 25 is you're proposing there.

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1 A. Well, you can see the window. This is a plan --
 2 Q. So you're looking --
 3 A. So you're looking down.
 4 Q. This is down through the building?
 5 A. Yes, it's as if we've cut a slice through the
 6 building --
 7 Q. Yes.
 8 A. -- at the window level, and so that slice goes straight
 9 through the window, and if you look at the window there,
 10 all the little lines denote the various parts of the
 11 aluminium window, and then you can see two lines moving
 12 out to the right of the page, triple lines together,
 13 that's the double glazing. Is that clear?
 14 Q. Yes, that is, and just --
 15 A. Okay? And then the column is on the left with the
 16 yellow surrounds to the grooves that run up the column,
 17 so there's the column face coming chamfered to the point
 18 that it meets the window and then returning at right
 19 angles to the window. So the inside of the flat is at
 20 the top, the outside of the flat is at the bottom.
 21 The cavity barrier that's rectangular, you can see
 22 the spike as a dotted line, that's been impaled on to
 23 that spike and it is as close to the edge of the cavity
 24 as it's possible to put a proprietary product that's
 25 purchased.

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1 There's then a gap, and that gap has to be filled .
 2 I believe that it would be possible to persuade or to
 3 attract cavity barrier suppliers to make special
 4 cavity barriers to fill that gap. If not, it would need
 5 to be packed with something like mineral wool.
 6 Q. Looking at this diagram, do we take it from what you
 7 just told us that that gap wasn't filled at all on the
 8 building as built?
 9 A. Yes, the model shows that clearly, there was no filling
 10 in there at all, so the gap between the window and the
 11 concrete, which I've referred to as being up to
 12 120 millimetres, existed vertically for the height of
 13 the window, and then there was a passage straight into
 14 the cavity, there was no protection of any sort, until
 15 the one vertical cavity barrier that did exist on the
 16 columns was reached, and that could be right round the
 17 other side of the column adjoining the next window.
 18 Q. Do you consider that the guidance in Approved Document B
 19 required this gap to be filled in the way that you have
 20 identified?
 21 A. It's clear, yes.
 22 Q. Could we then just go back to figure 3.33 at page 68
 23 {PHYR0000028/68} of this report, or this part of your
 24 report. We can see there that again there is a breather
 25 membrane, do you see?

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1 A. Yes.
 2 Q. On the right-hand column, "Breather membrane taped &
 3 sealed onto EPDM", and then below that on the left-hand
 4 side, also at the very bottom, breather membrane
 5 identified at the leading edge.
 6 A. Yes.
 7 Q. Is it the case that the proper functioning of the
 8 breather membrane would need an air gap between the
 9 corner piece and the cladding, looking at the one on the
 10 right-hand side?
 11 A. Yes.
 12 Q. And instead of the breather membrane being pressed up
 13 against the rear face of the cladding panel, there would
 14 need to be a gap?
 15 A. No, it would fill right the way up to the edge of there.
 16 Q. Is that a problem, given that the proper functioning of
 17 the breather membrane --
 18 A. No --
 19 Q. -- an air gap?
 20 A. I don't think so. I don't think so.
 21 Q. Why not?
 22 A. Because the gap is so infinitesimal. Again, these are
 23 all issues for discussion as the design develops, but
 24 the gap is so infinitesimal, so I don't think that
 25 that's a problem.

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1 Q. That may answer my next question, which is this: if this
 2 corner piece as you have designed it were to be
 3 installed in the way you have shown it, do you think
 4 that it wouldn't fill the entirety of the cavity because
 5 of the presence of the membrane and the way that it
 6 works?
 7 A. No, it's shown to fill it pretty tightly. The main
 8 purpose of it is at the top where the junction is with
 9 the window, it's to stop the passage of fire through
 10 there into that zone.
 11 As I say, it's an indication for discussion. I'm
 12 happy that it would form that. There may be refinement
 13 to it, other specialists may have comments.
 14 Q. Should the breather membrane allow water to trickle down
 15 the outside face of the membrane? So where you have
 16 shown it in the gap between the top of the membrane and
 17 the edge of the window, the jamb of the window.
 18 A. Water trickling down ... there's going to be damp in
 19 that zone, but it hasn't, in my mind, got the same
 20 function as the horizontal cavity barrier gaps behind
 21 the main part of the cassettes. But I see where you're
 22 going with that. I can only say it would need further
 23 discussion.
 24 Q. Right. I mean, the point I'm really putting to you is
 25 that this is an imperfect design because of the breather

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1 membrane, and the fact that, if it had to be packed
 2 tightly, it would not allow water to trickle through,
 3 and that's a design defect.
 4 A. Possibly. There may be even discussion about leaving it
 5 out. I would need to take specialist advice on that.
 6 Q. I see.
 7 Now, of course, this is a bespoke piece, as you have
 8 explained. Would you expect a specialist subcontractor
 9 to design this element instead of the reasonably
 10 competent architect in the position of Studio E?
 11 (Pause)
 12 A. Well, the word there is "specialist", the specialist
 13 subcontractor. Their literature states with confidence
 14 their capabilities. Amongst those is of course
 15 installation, and implicitly an installation which is
 16 compliant with code. It's a problem that has to be
 17 solved somewhere down the line. I've already said
 18 I think that at tender stage the principles should have
 19 been resolved. Those principles I think should then
 20 have been refined by the subcontractor as they move on
 21 into fabrication. This is an example of fabrication.
 22 Alternatively, and this is back to the territory of
 23 yesterday, if there was something fundamentally wrong,
 24 I would hope and expect that the subcontractor picked it
 25 up.

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1 But the intent should have been there on the
 2 architect's drawing, the problem should have been
 3 identified and the intent should have been there. There
 4 may have been discussion as to exactly how to do it.
 5 Q. Would the reasonably competent architect, when designing
 6 through to stage E or F1, have addressed this problem
 7 and produced a bespoke solution such as the one that you
 8 are recommending?
 9 A. I think so, so the answer is yes. I did make it clear
 10 that tenders can be sought with varying degrees of
 11 information at various stages of the process. It would
 12 have been possible to have gone out for tenders at the
 13 end of stage C or stage D, in which case it would not be
 14 there. But in this case, the TMO appointed the
 15 architect to take the work through at least to the end
 16 of F1. On that basis, I believe it should have been
 17 there.
 18 Q. Thank you.
 19 Now, I want to put a countervailing argument to you.
 20 Is it possible that the design of bespoke pieces such as
 21 this, if designed in and specified by Studio E at that
 22 stage, pre-tender, would you be of the opinion that that
 23 would amount to the illegitimate or perhaps undesirable
 24 curtailment of the subcontractor's freedom to develop
 25 the design?

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1 A. No, because the subcontractor can -- the tendering
 2 contractor can have amongst the notes for discussion
 3 an alternative arrangement, and could say, "Here's our
 4 tender, but we wish to discuss the following". Or they
 5 could raise it without having qualified it at the
 6 beginning. Later on, after being appointed, they could
 7 say, "We're looking at this in a different way, we want
 8 to discuss it". So it doesn't preclude that.
 9 Q. Thank you.
 10 I want to turn now to the topic relating to
 11 cavity barriers around the vertical cladding rail, which
 12 you have explained to us in your model.
 13 Could we start, please, by looking at
 14 {BLAS0000008/57}. Now, on that page is a photograph
 15 with two rings in it. Can you see that?
 16 A. I certainly can, yes.
 17 Q. This is, just to be clear, figure 8.64 from
 18 Barbara Lane's report.
 19 A. Yes.
 20 Q. This is a photograph, I think, of the spandrel condition
 21 with the column to its right, if you're looking at it
 22 from the camera's point of view.
 23 There is a black line down the middle, and that's
 24 the cladding rail. If you look inside the blue circle
 25 there, you can see what I think you called the lugs or

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1 the bolts on which the cladding panels are to be hung.
 2 A. Could we use the word "toggles", would that be
 3 acceptable?
 4 Q. "Toggles", is the word you use.
 5 A. Yes.
 6 Q. Is it right that behind the rail you can see a quantity
 7 of insulation, and below the insulation you can see the
 8 cavity barrier?
 9 A. That is correct.
 10 Q. And that's got a silver top and a black face.
 11 A. May I draw your attention, if you look at the junction
 12 of the -- the right-hand part of either of the circles,
 13 if you look at the junction of the black, which is the
 14 channel, with the silver, which is the face of the
 15 insulation, you will see a yellow strip.
 16 Q. Yes.
 17 A. That yellow strip is where they have pre-cut into the
 18 insulation so that it fits, it accepts the channels.
 19 I showed that on the model when we started on Monday.
 20 It's the notches that are cut.
 21 Q. Yes, thank you. That then leaves a gap within the
 22 cladding rail, the U-shaped cladding rail, doesn't it?
 23 A. Yes, yes.
 24 Q. Now, Mr Lamb was asked about all of this in his
 25 evidence, and particularly whether he considered this

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1 gap in the cladding rail, and let's look and see what he
 2 says. It's {Day38/113:2}, please. At the top of the
 3 page, Mr Lamb is asked by Ms Grange at line 2:
 4 "Question: Yes, but you've still got the break in
 5 the cavity barrier where the rail goes. Do you agree?
 6 "Answer: Yes, but the rails are continuous so
 7 there's no alternative."
 8 If you look a little bit further down that page to
 9 line 11, he is asked:
 10 "Question: Why didn't you ever give any
 11 consideration to the gaps that would be created by the
 12 cladding rails as they went through the cavity barriers?
 13 "Answer: There were no gaps. It was cut tight to
 14 the cladding rails."
 15 Do you see he says that?
 16 Then he is asked:
 17 "Question: Yes, but the cladding rail itself was
 18 a channel through which the cavity barrier did not fit.
 19 Does that make sense? It didn't go through the middle
 20 of the cladding rail.
 21 "Answer: Yes, the front is, yes."
 22 Then he's asked --
 23 A. Sorry, can I read that again? That's 16:
 24 "Yes, but the cladding rail itself was a channel
 25 through which the cavity barrier did not fit."

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1 No, the cavity barrier was cut around the back of
 2 the channel, that is correct. Yes.
 3 Q. Yes. Then Ms Grange asks him:
 4 "Question: We'll come and I'll show you some
 5 pictures, and I think in Paul Hyett's report we get --
 6 "Answer: I mean, this is normal practice.
 7 "Question: It's normal practice to cut around the
 8 cladding rail, is that what you're saying?
 9 "Answer: That's right, as long as it's tight on the
 10 inside, you can do no more on the outside because it is
 11 a cladding -- it is a continuous joint."
 12 A. Yes.
 13 Q. Then she asks:
 14 "Question: But wouldn't it have been possible to
 15 put a piece of cavity barrier inside the U-shape of the
 16 cladding rail so that you have a continuous cavity
 17 barrier along the spandrel?
 18 "Answer: But that would be exposed to the outside
 19 world then.
 20 "Question: No, it was inside the rainscreen.
 21 "Answer: Okay, I think we need to have a look at
 22 the detail then.
 23 "Question: Yes, we can do that."
 24 Again, I'm sorry, I'm going to show you some more
 25 mouthfuls of this, but let me just do that.

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1 If we go to page 151, line 7 {Day38/151:7},
 2 Ms Grange asks Mr Lamb this question:
 3 "Question: And that's why I'm asking whether anyone
 4 ever thought about whether or not that was
 5 an unsatisfactory arrangement and that there ought to be
 6 some consideration of dealing with that vertical gap
 7 through the cavity barrier?
 8 "Answer: In my experience it's not something that
 9 is ever done. You don't fill it with an insulation.
 10 But maybe the argument is that the cavity barriers are
 11 to stop the spread, the unseen spread of flame. If
 12 a flame gets into that black zone, you can see it from
 13 between the gaps in all the panels from outside.
 14 "Question: Really?
 15 "Answer: Yes."
 16 At line 23 -- I think I can skip over the next
 17 exchange -- he says:
 18 "All I'm saying is that, in my experience, it's not
 19 normal to try and put a cavity barrier inside that
 20 rail."
 21 So that's his oral evidence and his view, having
 22 been pressed quite rigorously on it.
 23 Can we then look at your report at {PHYR0000028/80},
 24 please. Here we have figure 3.41, which is "Typical
 25 Detail 4 - Plan detail through: spandrel/column

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1 interface where column aligns with compartment wall".
 2 Do you see that?
 3 Q. You have got your cladding rail there in the bottom
 4 right-hand corner of the diagram, do you see that?
 5 A. Yes.
 6 Q. I think you have an arrow pointing to "Cladding vertical
 7 channel" there. That's the fourth from the bottom --
 8 A. Yes, correct, and the toggle going through it.
 9 Q. With the toggle going through it, exactly, or lug, as
 10 I think I've wrongly called it.
 11 If you look at that, I'm interested in the bottom
 12 right-hand drawing there. You can see I think
 13 a zoomed-in diagram of this on page 81 {PHYR0000028/81}.
 14 A. Just for the Inquiry's benefit, this is a cut through
 15 the building, the previous drawing, if you don't mind.
 16 Q. Can we go back to page 80 {PHYR0000028/80}.
 17 A. That is a cut through the building underneath the
 18 drawing that we were looking at previously, which was
 19 cut through the building at window level. This is
 20 cutting through the spandrel panel below the window.
 21 Q. Yes, exactly. This isn't about the windows. This is
 22 about vertical channels.
 23 A. No. Very difficult for people to visualise, but that's
 24 where it is.
 25 Q. Yes, we're on the topic of the vertical channels, not

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1 the window condition.
 2 A. Yes.
 3 Q. Going back if we can, please, to page 81
 4 {PHYR0000028/81} and look at 3.42 we can see a close-up,
 5 as it were, of the typical cladding joint at spandrel,
 6 and you can see that the vertical cladding channel is
 7 essentially an upside-down U shape here.
 8 At the very bottom of the diagram, is it right that
 9 there is an aluminium rainscreen cladding depicted there
 10 returning into the vertical cladding channel, it comes
 11 in and up -- yes? -- and either side of the channel
 12 there are open-state cavity barriers abutting the
 13 vertical cladding channel. You see that? Is that
 14 right?
 15 A. Yes. Well, where it says "Horizontal 'open state'
 16 cavity barrier", that black dot at the end of that line
 17 is the intumescent strip at the edge of the
 18 cavity barrier which goes all the way to the top of the
 19 picture.
 20 Q. Yes.
 21 A. Yes.
 22 Q. So cavity barriers would be abutting the cladding rail,
 23 as you have shown it, I think?
 24 A. Yes, the cavity barrier -- we showed it with the
 25 model -- is pushed on to the spikes, and it has notches

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1 cut out of it to receive the channels which then fit
 2 neatly into the notch.
 3 I do beg your pardon -- you're going to want to come
 4 back to it later, I think -- I misdescribed the
 5 insulation on Dr Lane's drawing earlier. I won't
 6 interrupt now, but we may want to go back to that to
 7 just correct that.
 8 Q. Let's do it now, then, while we have it --
 9 A. If we could have Dr Lane's drawing back again. I do
 10 apologise. It was a mistake I made.
 11 Q. Do you mean Dr Lane's photograph?
 12 A. Yes.
 13 Q. That will be {BLAS0000008/57}. There it is.
 14 A. It was silly of me, I drew attention to the yellow strip
 15 along the edge of the black channel and said that that's
 16 where the insulation has been pre-cut, but it was only
 17 the cavity barriers that were pre-cut to receive the
 18 channel, as you can see. The silver at the bottom of
 19 the picture, that silver is the cavity barrier being
 20 cut, and I don't know why that yellow strip exists there
 21 at all.
 22 Q. I was going to ask you about that, actually.
 23 A. I'm sorry.
 24 Q. We skipped over it. No, it's interesting. I mean, in
 25 fact, is it the case -- it looks like the case -- that

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1 actually the yellow strip is the exposed PIR or phenolic
 2 where the person who's cut it has exposed PIR behind the
 3 silver foil, the aluminium foil facing, this being
 4 insulation?
 5 A. Actually, I don't know what that is.
 6 Q. That's what I'm suggesting to you. I know you didn't
 7 take the photograph and weren't there at the time, but
 8 that is a possibility, that it's actually exposed PIR.
 9 A. It doesn't look like PIR to me, actually, it looks like
 10 mineral wool, that top piece of that. So I'm not sure
 11 what that is there. I may have seen this photograph
 12 before, but it looks strange to me. I think there's
 13 further enquiry needed into what that photograph is.
 14 Q. Sticking with it, then, we can certainly agree with each
 15 other that at the bottom of the rail there is the
 16 horizontal cavity barrier with the black face being the
 17 intumescent strip.
 18 A. That's correct.
 19 Q. Which is at a horizontal level overlapped by a foil;
 20 yes?
 21 A. Yes.
 22 Q. Yes.
 23 A. Yes, that is correct. I'm sorry to have distracted us
 24 on the other point.
 25 Q. No, that's okay. We've clarified that, I think. There

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1 may or may not be a mystery about the yellow vertical
 2 line there. I'm not sure it necessarily matters.
 3 Can we then go back to the zoomed-in diagram --
 4 A. Yes.
 5 Q. -- of the vertical channel at page 81 of your report,
 6 {PHYR0000028/81}. We can see that there. You show the
 7 cavity barriers abutting the cladding rail.
 8 A. Correct.
 9 Q. Yes.
 10 Now, if you were to imagine that the cladding panels
 11 were not indicated, is it right that there would then be
 12 a gap running the entire way down the vertical cladding
 13 channel?
 14 A. Yes. First of all, the grey, it says, "Light grey
 15 indicates a zone that the 'open state' cavity barrier
 16 will close up". So I now imagine there has been a fire
 17 and the intumescent strip has expanded and the
 18 cavity barrier has come out to touch the back of the
 19 cladding.
 20 Q. Yes.
 21 A. Okay? The pink zone indicates where that intumescent
 22 strip would not have gone. It may have strayed a little
 23 into the pink, but essentially it's going to go
 24 outwards. It certainly won't go round the corner.
 25 Q. Exactly.

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1 A. The pink being round the corner.
 2 Q. We're going to come to the pink in a moment.
 3 A. Okay.
 4 Q. But am I right, just focusing on my question, that the
 5 cladding panels, if they weren't indicated on this
 6 drawing, if you took them away, that would create a gap
 7 running the entire way down the vertical channel?
 8 A. Yes.
 9 Q. Yes.
 10 A. There's a slot right the way up, yes.
 11 Q. Exactly. That's the gap we saw in the photograph in
 12 Dr Lane's report a moment ago?
 13 A. Yes, correct.
 14 Q. Now, then, we can see that the cladding returns into the
 15 gap, as you show. When you fit it, it goes into the
 16 gap.
 17 A. And it hooks over the toggles.
 18 Q. It hooks over the toggles.
 19 A. Yes.
 20 Q. And you have shown a remaining gap, and you have called
 21 it the residual flanking zone, I think.
 22 A. Yes.
 23 Q. That's still a gap?
 24 A. Yes.
 25 Q. Now, Mr Lamb offered in his evidence a reason why that

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1 gap was not addressed, and that, as he says, may have
 2 been because if a flame gets into that gap there, then
 3 you can see it from between the gaps in all the panels
 4 from the outside. That's the part of the transcript
 5 I showed you.
 6 Am I right in thinking that actually you wouldn't be
 7 able to see that flame at all? If a flame got into the
 8 pink areas, you wouldn't be able to see it from the
 9 outside, would you, or would you?
 10 A. No, because the panel conceals it, but you may see
 11 flickering shadows of -- you know, a flame is a light,
 12 so if it was dark, for example, you would see, between
 13 the returns of the cassettes where they both go back and
 14 over the toggle, light coming out from there in the
 15 dark. In the daytime, no, you wouldn't see the flame.
 16 Q. Right. So to what extent would the gap in which the
 17 flames would appear be masked by the cassettes?
 18 A. It would be completely masked if the flames restricted
 19 themselves to just the pink. I think they would sort
 20 of -- what do flames do? They would blow out, you know,
 21 into the area behind the toggle, between the toggle and
 22 the channel. But in principle the fire starts within
 23 the cassette and cannot be seen.
 24 MR MILLETT: Yes, thank you.
 25 Mr Chairman, we are still in this topic, but it is

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1 certainly a convenient moment for the break now,
 2 I think.
 3 SIR MARTIN MOORE-BICK: Yes.
 4 MR MILLETT: It's not a perfect moment in the questions, but
 5 it's a perfect moment in the day.
 6 SIR MARTIN MOORE-BICK: I think it is, isn't it, Mr Hyett?
 7 I think we ought to have a break now. So we'll stop now
 8 for lunch.
 9 THE WITNESS: If everybody else would like a break, I'll
 10 certainly fall in.
 11 SIR MARTIN MOORE-BICK: We'll stop now and resume at 2.10,
 12 please.
 13 THE WITNESS: Thank you.
 14 SIR MARTIN MOORE-BICK: Again, please don't talk to anyone
 15 about your evidence while you're out of the room.
 16 THE WITNESS: No, I won't.
 17 SIR MARTIN MOORE-BICK: Thank you very much.
 18 (Pause)
 19 2.10, please. Thank you.
 20 (1.07 pm)
 21 (The short adjournment)
 22 (2.10 pm)
 23 SIR MARTIN MOORE-BICK: All right?
 24 THE WITNESS: Yes.
 25 MR MILLETT: Mr Chairman.

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1 Mr Hyett, we were on your report at {PHYR0000028/81}
 2 and looking at figure 3.42.
 3 Could we pan out, please, from the diagram and look
 4 at the text at the top of the page, where you say this:
 5 "Where the horizontal cavity barrier interfaces with
 6 the vertical channel support of the cladding, a seal
 7 will be required to prevent any by-pass of the barrier
 8 via the gaps between the cladding cassette and the
 9 channel, which is inherent in the channel and cassette
 10 system to provide buildability tolerances. (The
 11 internal dimension of the spandrel cassettes is greater
 12 than the length of the vertical supporting rails to
 13 enable installation and therefore gaps are inevitable.
 14 These must be sealed). The drawings below illustrate
 15 this condition. They can be read with the 'physical'
 16 model provided for this condition."
 17 Now, your solution, I think, to the concern or
 18 problem that you have identified is to place a seal in
 19 those gaps, isn't it?
 20 A. Correct.
 21 Q. If we look at figure 3.44 on page 82 {PHYR0000028/82} of
 22 this report, the next page over, we can see here the
 23 seals highlighted in green, am I right?
 24 A. Correct, yes.
 25 Q. So is it your proposal here to place intumescent strips

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1 bonded and mechanically fixed to the vertical channel?
 2 That's your solution, I think, there.
 3 A. The exact way of fixing them, I think, would be the
 4 matter of some discussion, but one way would be to fix
 5 them on to the outside sides of the channel, yes.
 6 Q. Is the idea that these would expand as cavity barriers
 7 would expand in the event of a fire, filling that gap?
 8 A. Correct.
 9 Q. Do you think that that approach would resolve this
 10 problem, namely the problem of the gap within the
 11 U-shaped rail we saw, which is caused as a result of
 12 needing to cut the cavity barriers around the cladding
 13 rail?
 14 A. I believe it would. Could we go back to the previous
 15 drawing?
 16 Q. Yes. Page 81 {PHYR0000028/81}. Is that figure 3.42?
 17 A. Yes.
 18 Q. Right.
 19 A. Why I wanted to show that drawing is that there is
 20 a discussion to be had about: where is the outside of
 21 the building? You can see the note, "Aluminium
 22 rainscreen cladding", and there's a black dot. That
 23 shows the outside face of the aluminium. But that
 24 returns into the channel, and stops. It sits across the
 25 toggle. There is another aluminium cladding panel

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1 coming in as well, the tray is coming in there.
 2 So the outside of the building is the bottom
 3 horizontal line, but then it returns into the channel,
 4 and I think that the outside of the building actually
 5 goes right into the channel face, the inside part of the
 6 channel.
 7 Q. When you say the outside of the building, you actually
 8 mean the exterior face of the inturn or upturn of the
 9 aluminium cladding?
 10 A. I mean the external face of the building returns with
 11 the tray, for want of a better term, into the channel.
 12 It is essential that the horizontal cavity barrier
 13 closes that gap.
 14 It's a very difficult piece to gather in three
 15 dimensions. It's challenging for architects to get
 16 this, it would be challenging for everybody else. But
 17 if you don't have that sealed, fire underneath the
 18 cavity barrier can break into the channel and then up
 19 inside the channel and back into the space, the next
 20 concealed space, that's the space that forms the cavity,
 21 above the cavity barrier. Is that clear? This is what
 22 that is intended to address.
 23 Q. It is to me. As long as my question was clear to you,
 24 I think that's what matters. I think you have answered
 25 it.

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1 Just to repeat it, my question was whether this
 2 approach would solve the problem, namely the gap within
 3 the U-shaped rail, which --
 4 A. I think the --
 5 Q. -- cavity barriers around the cladding rail?
 6 A. What is shown pink would have to go the entire height of
 7 the tray. So the return edge of the tray would have to
 8 have that seal all the way up it, so that at no point
 9 could any fire which has got into the part of the
 10 channel where the toggle is, no fire in there could
 11 break back out around the edge of the channel and into
 12 the cavity above. So that would have to go the whole
 13 way up.
 14 Q. Can we go back to page 82 {PHYR0000028/82} --
 15 A. Yes.
 16 Q. -- and look at figure 3.44.
 17 A. Yes.
 18 Q. If you look at that there, you can see, as I pointed out
 19 to you, the green square --
 20 A. Yes.
 21 Q. -- with the arrow pointing to "Intumescent strip bonded
 22 and mechanically fixed to vertical channel"; do you see
 23 that?
 24 A. Yes.
 25 Q. How would those seals or intumescent strips be bonded to

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1 the rail?
 2 A. Well, they can be glued to the rail, fixed in that
 3 fashion, because they've just got to stay there. Once
 4 there's a fire, they would expand and, by virtue of
 5 having expanded, they would fill the gap and stay there.
 6 So they've just got to remain in the non-fire condition.
 7 Q. Would another solution which could be adopted be the use
 8 of compressible mineral wool within those gaps?
 9 A. Yes, provided that it could be firmly adhered and -- but
 10 the difficulty with that is that in order for the
 11 mineral wool to fill the gap between the channel and
 12 the -- can I call it the lip? Would everybody
 13 understand if I said that? In order for it to fill that
 14 gap, it would be much thicker, and pushing the cassettes
 15 on would be a difficult thing, because the mineral wool
 16 would be in danger of being snagged and pushed out of
 17 position. It's better to have something thinner like
 18 an intumescent strip which will then expand.
 19 Q. I follow.
 20 Now, you can see on this diagram, as we can on the
 21 previous one -- let's start with this one at 3.44 --
 22 that that still leaves a gap in the vertical channel at
 23 the very back of the rail, doesn't it?
 24 A. Yes, and everybody's got the idea, have they, that this
 25 is a worm's eye view? You're looking up at it from

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1 underneath.
 2 Q. Absolutely. So this is the opposite of a plan, I think?
 3 A. Well, it's sort of axonometric. We do two types of
 4 these drawings: one is looking down, because it's a
 5 perspective, and the other is looking up from
 6 underneath. This is actually looking up from
 7 underneath. It requires, you know, quite a bit of
 8 imagination to do this.
 9 Q. I think I have got enough imagination to be able to pose
 10 the question, and that is: looking up at it from my
 11 position as a worm, there is a white area still to the,
 12 as it were, south east of the green oblongs.
 13 A. If I may say so, well done, that is correct, yes.
 14 Q. It's probably easier to see on figure 3.42 on the
 15 page 81 {PHYR0000028/81}, if we can go to that, because
 16 I can ask the question better, I think, by reference to
 17 that.
 18 A. Yes, there it is.
 19 Q. Yes, and you can see still the white part at the top of
 20 the U, which you have identified as "Vertical cladding
 21 channel". That gap remains, doesn't it, notwithstanding
 22 your proposed --
 23 A. That's correct.
 24 Q. Why would it be acceptable to leave that gap unfilled?
 25 A. Because I made the point a few moments ago about the

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1 distinction of what is the outside and the inside of the
 2 building. I think the outside of the building, the
 3 outside of the cladding, is the slot between the two
 4 edges of the cassette as it goes into the channel.
 5 I think that's arguably still outside the building. But
 6 either way, the pink there would go from top to bottom,
 7 and therefore it would seal the inside -- the cavity
 8 inside the rainshield, it would seal the cavity inside
 9 the rainshield above and below the cavity barrier from
 10 that vertical space within the channel. So effectively
 11 the inside would have been sealed from the outside.
 12 Q. Yes, I see.
 13 A. It's a challenging thing to grasp, I am afraid.
 14 Q. No, you have explained it, I think, very clearly, and if
 15 you haven't, no doubt I shall be asked to clarify it
 16 further with you.
 17 But just looking at that and thinking about it,
 18 that's a bespoke piece, isn't it, the pink?
 19 A. Yes, yes.
 20 Q. And is that something that could be engineered on site,
 21 or would that need to be considered carefully by the
 22 architect long before this got anywhere near
 23 a construction site?
 24 A. I think it would want to be thought about -- well, I'm
 25 going to qualify that, if I may, in a moment. But

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1 I think ideally it should be thought about early,
 2 because the overall arrangement has to be signed off as
 3 workable, and unless you can deal with this, then the
 4 problem may not be solvable. So I would wish to see it
 5 solved early.
 6 However, I would like to qualify that, if I may. Is
 7 that okay?
 8 Q. Yes.
 9 A. I have been given the privilege of looking at this with
 10 all the information that is now available. At the time
 11 that this work was done, 2012, 2013, taking it right
 12 through to 2016, there would not have been the level of
 13 focus on an issue like this. Mr Lamb I think is quite
 14 correct. I haven't done any kind of audit of the
 15 buildings across the country, but where buildings have
 16 got cassette arrangements like this, then I think those
 17 are likely -- I only say likely -- to show this kind of
 18 problem unsolved.
 19 This is an issue I think that the entire industry is
 20 going to have to look at very seriously. Rainscreen
 21 systems need to be considered carefully in terms of the
 22 protection of the cavity and the -- Dr Lane talks about
 23 the integrity of the cavity barriers, that's one thing.
 24 The second issue is, even if the cladding line stays
 25 where it should, we must deal with gaps around it, and

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1 this has had a level of scrutiny that I don't think
 2 would have been routinely applied by design teams at the
 3 time.
 4 Q. Looking at the distinction, if there is a distinction,
 5 between the work to be done by Studio E as the
 6 reasonably prudent architect and the work to be done by
 7 Harley as the reasonably prudent and skilled cladding
 8 subcontractor, is the design and specification of this
 9 detail here, and your solution to the filling of this
 10 gap, one which would be examined and arrived at by
 11 Studio E or by Harley, looking at it from the point of
 12 view of the reasonably competent architect?
 13 A. I think it tips into the territory of the specialist
 14 subcontractor.
 15 Q. Right.
 16 Now, can we move on to look at the cill --
 17 A. I beg your pardon, if I may, I think that in the future
 18 architects would look at a thing like this and want to
 19 know how it is solved, but the solving of it tips to the
 20 territory of the subcontractor.
 21 Q. Right. And if it was solved, it having tipped into the
 22 subcontractor's territory, as you put it, would it
 23 nonetheless be something that the reasonably prudent
 24 architect would want to know about and satisfy
 25 themselves about once the specialist cladding

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1 subcontractor had arrived at the solution?
 2 A. Yes, except for that would be the architect in the role
 3 of co-ordinating the team, and the important team member
 4 here is the specialist fire consultant, and so I think
 5 that the architect would want to make sure that all the
 6 brains that are going to be applied to it from the
 7 consultant team side have been satisfied.
 8 Q. Do I take it from this exchange that the examination and
 9 specification of this solution is not something that you
 10 would expect the reasonably prudent architect to come up
 11 with and examine at stage E or F1?
 12 A. Then I don't think so. Now I do.
 13 Q. I see.
 14 Can we then turn to the cill level. Can I go,
 15 please, to page 73 {PHYR0000028/73} of this report, and
 16 let's look together at figure 3.35. This is "Typical
 17 Detail 2 - Sill detail".
 18 Am I right, this shows the bespoke piece at the
 19 cill, third down on the left?
 20 A. This is correct.
 21 Q. It says:
 22 "Bespoke sill piece by a manufacturer of vertical
 23 cavity barriers to fully fill residual cavity at window
 24 sill. Alternatively, if not available residual cavity
 25 filled with mineral wool batt held under compression."

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1 Again, the same questions, and I'm sorry about that,
 2 but I need to ask them again in relation to this detail.
 3 Breather membrane, we can see there is a breather
 4 membrane you have added two items down from what I have
 5 just read --
 6 A. Yes.
 7 Q. -- to run between the cladding bracket and the cill
 8 cassette and dressed over the horizontal cavity barrier.
 9 A. Yes.
 10 Q. Would the breather membrane there require a gap between
 11 the cill piece and the cladding?
 12 A. No. You may wish me to go through every point again,
 13 but my answer is it's the same condition as the jamb.
 14 The breather membrane allows moisture to pass out but
 15 stops wet going in, and so moisture can pass out of the
 16 bespoke piece there, and then it would spread up under
 17 the inside face. It would pass up under the inside face
 18 of the cassette, and out at the cill level.
 19 Q. So do we read your answers in relation to this detail
 20 here as the same --
 21 A. Yes, yes.
 22 Q. -- as you gave us in relation to the earlier diagram we
 23 looked at?
 24 A. Correct, sir.
 25 Q. Now, we can see -- and it's a question that really

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1 hangs, we can ask it off this diagram -- that the new
 2 windows at Grenfell Tower were placed outside the plane
 3 of the original masonry line, weren't they?
 4 A. "Plane" is the word I should have used earlier. That's
 5 absolutely the right word, yes.
 6 Q. Was it necessary to do that? Was it necessary to have
 7 the windows in that location?
 8 A. We call it the thermal line. The insulation outside the
 9 building needed to be continuous through to the windows.
 10 If that wasn't achieved, there would be what we call
 11 a cold bridge, a gap. So there's all sorts of problems
 12 with that. Apart from the loss of insulation, there's
 13 condensation, all sorts of problems.
 14 You may remember, and perhaps I can refer to it,
 15 when I was explaining the model, I believe I said that
 16 if the windows had been left in their original position,
 17 the insulation would have had to have been brought down
 18 the spandrel panel, I'm taking the section through the
 19 building, over the window and then it would have had to
 20 have turned and gone under the concrete slab until it
 21 reached the window. That would have been a depth of
 22 something like that (indicated). Likewise with the
 23 cill, it would have had to come up and across to meet
 24 the window frame. That would have reduced the depth of
 25 the windows. It would have had a major -- I won't say

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1 adverse, because that's subjective, but it would have
 2 had a major impact on the appearance of the building.
 3 It would have reduced the view from inside. At the
 4 jambs, the same thing would have had to have happened.
 5 So I think it would have been difficult to deal
 6 with, and therefore I believe most if not every
 7 architect would conclude that to overclad the building,
 8 the windows would move out.

9 Q. Thank you.

10 I now want to turn to a completely different topic,
 11 which is building control.

12 A. Sorry, to overclad the building with insulation on the
 13 outside, then the windows go out.

14 Q. Yes, I understand.

15 As I say, I just want to ask you now some general
 16 questions on the subject of the involvement of the
 17 building control body, if I may.

18 Can I take you to your supplemental report, please,
 19 {PHYS0000005/57}, paragraph 6.8.3. You quote from the
 20 RIBA Legal Handbook 2013, second edition, and you say
 21 that:

22 "... the architect may produce design documentation
 23 that is approved by the building control service, but
 24 the architect must still comply with the requirements of
 25 the Building Regulations themselves and not rely solely

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1 on this approval' (paragraph 7.5.1, page 185)
 2 {INQ00013967}."

3 Can we take it that it is, in your view, not
 4 reasonable for an architect to rely on building control
 5 as the only check on whether a design complies with the
 6 Building Regulations?

7 A. That is my view.

8 Q. And a reasonably prudent or reasonably competent
 9 architect must check that for himself, whatever the
 10 building control body decides to do?

11 A. That is correct.

12 Q. In relation to the full plans application, you say in
 13 your report that it's accepted practice that a full
 14 plans application should be submitted with a set of
 15 general arrangement drawings and typical construction
 16 details. I can show you that if you want.

17 A. No, I remember it.

18 Q. Just for reference purposes --

19 A. Okay.

20 Q. -- it's paragraph 5.1.8 on page 5 {PHYR0000030/5}. But
 21 you remember that. That's what you say.

22 In your experience, would general arrangement
 23 drawings include basic details such as the type of
 24 cladding proposed?

25 A. The generic type, yes. Not necessarily the

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1 manufacturer, but the generic type.
 2 Q. When you say generic type, could you be a bit more
 3 specific?
 4 A. ACM, zinc, terracotta, whatever it's going to be.
 5 Q. I see.
 6 Would general arrangement drawings typically include
 7 the insulation proposed?
 8 A. The same answer, generically yes.
 9 Q. What would that be in the case of RS5000 or FR5000?
 10 A. Well, it could be mineral wool if it was not going to be
 11 that. Alternatively, I suppose it might be PIR or it
 12 might just simply specify the name.
 13 Q. What about the cavity barrier strategy? Would general
 14 arrangement drawings include basic details about the
 15 cavity barrier strategy?
 16 A. Well, it's a design and build contract. I know there
 17 were delays, this one went slower than was anticipated,
 18 but it's getting pretty late -- no, my view is that the
 19 cavity barrier strategy should have been sorted out
 20 before they ever went out to tender anyway. So having
 21 got it sorted out then, that would be information
 22 available to submit with a full plans application.
 23 Q. So the answer is yes?
 24 A. The answer is yes, yes.
 25 Q. At the full plans stage, would you also expect a clear

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1 statement about which route to compliance with --
 2 A. Yes, absolutely. I'm sorry, I should have waited for
 3 you.
 4 Q. Yes, route to compliance with 12.6 to 12.9 of ADB --
 5 A. Yes.
 6 Q. -- and the answer is yes.
 7 Would you expect a clear statement from the
 8 designer, and for the present purposes I mean Studio E,
 9 that the proposals complied with the Building
 10 Regulations? Would you expect a clear statement from
 11 the architect in or in accompaniment with the general
 12 arrangement drawings?
 13 A. I don't remember ever giving such an assurance. I think
 14 it's implicit.
 15 Q. Right.
 16 Conversely, would you expect them to flag up any
 17 issues where they either knew or thought that there was
 18 any doubt about whether what they were proposing was
 19 compliant with the --
 20 A. Not with a full plans application, because any
 21 uncertainty should have been resolved beforehand. There
 22 may be things to be resolved later that haven't been
 23 shown, but the full plans application, insofar as it
 24 gave information, should be compliant.
 25 Q. Can we go to your report, please, at {PHYR0000030/6},

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1 and I would like to go to paragraph 5.1.22 there in the
 2 middle of the page. You're discussing the information
 3 to be forwarded with the full plans application there,
 4 and you say:
 5 "Such a 'rolling' process for the issuing of
 6 information requires very clear communication. In
 7 particular the applicant should make it clear that such
 8 information is to be received as part of the initial
 9 'Full Plans' application and all documents subsequently
 10 submitted should be clearly identified in that respect."
 11 In your view, did Studio E meet that requirement?
 12 A. No.
 13 Q. Could you just briefly clarify why you say that, or
 14 explain why you say that?
 15 (Pause)
 16 A. Well, I can't remember exactly which documents I have
 17 seen, I can't name them, but I've seen a large number of
 18 documents, a large number of communications, emails,
 19 et cetera, which were not explicit as to the purpose of
 20 the drawings that were attached to them, apart from the
 21 fact that we've got all the problems with drawing
 22 numbers and that.
 23 I would prefer to see a situation where a full plans
 24 application is made, drawings are listed on that
 25 application, and they're general arrangement, they're

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1 sufficient for the building control officer to
 2 understand the proposal and the building.
 3 Subsequent information is going to be submitted.
 4 Each package of subsequent information should state that
 5 it is part of that original application, it's not some
 6 parallel enquiry, it's a part of the application, "Here
 7 is another piece of the application". It should list
 8 the drawings clearly. That wasn't done.
 9 The architect's job is to ensure that the building
 10 inspector has every assistance in discharging his or her
 11 duty. We have a complete picture of the building in our
 12 mind, and if we haven't got all the information together
 13 at the beginning to submit in one application, then
 14 subsequent pieces of information should be clearly
 15 described, clearly stated in terms of where they fit
 16 into the whole, and related back to that full plans
 17 application, and that was not done.
 18 Q. Did Studio E's approach in general to the full plans
 19 application and the building control process meet the
 20 standard of the reasonably competent architect?
 21 A. No.
 22 Q. Again, is that for the same reasons or are there other
 23 reasons?
 24 A. It's the same reasons. I think what I've described
 25 encompasses the problem.

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1 Q. Let's just look over the page at pages 7 and 8
 2 {PHYR0000030/7} of your report at paragraph 5.1.26,
 3 because I think we see there your reasons, and this is
 4 under the heading "Summary of findings". You say:
 5 "The picture that emerges through this review is one
 6 of general disorder which I summarise as follows."
 7 And you've got them summarised there:
 8 "(a) The pre-application dialogue was not
 9 comprehensive ...
 10 "(b) The Full Plans Application was late ...
 11 "(c) ... lack of co-ordination in terms of
 12 processing the application ...
 13 "(d) ... lack of precision around dates of
 14 information issue and receipt and in terms of drawing
 15 numbers and revision references."
 16 Do those remain your key reasons why you are
 17 critical of Studio E in this respect?
 18 A. They do, and I think it should have led to the rejection
 19 of the application.
 20 Q. Are there any other reasons, now that you have heard the
 21 evidence and seen the transcripts from the witnesses,
 22 that you would add to that list?
 23 A. Could I just go back to the previous page?
 24 Q. Yes, if we can just go back to page 7, please.
 25 (Pause)

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1 A. I think these general headings cover it.
 2 Q. Very well.
 3 A. Yes, I think it covers it.
 4 Q. Very well, thank you.
 5 Now, Mr Crawford's evidence -- and I'm summarising
 6 it -- was that he wasn't aware of regulation 38 of the
 7 Building Regulations. Now, just to be fair to him and
 8 clear with you, I should show you what he said. It's
 9 {Day11/123:9}, please. He was asked by me at line 9:
 10 "Question: Were you aware of regulation 38 of the
 11 Building Regulations at the time of the Grenfell Tower
 12 project?
 13 "Answer: I don't think specifically."
 14 Then I took him to regulation 38.
 15 Then at line 23 I asked him:
 16 "Question: Was that something you were familiar
 17 with at the time of your involvement in the project?
 18 "Answer: Not specifically, no."
 19 My question is: would you expect a reasonably
 20 competent architect to be aware of that provision in the
 21 Building Regulations?
 22 A. Yes, and certainly -- they either know it or, in taking
 23 on this project, they're going to carry out their code
 24 review and pick it up.
 25 Q. In your experience at the time of the Grenfell Tower

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1 project, what was the general standard of awareness of
 2 regulation 38 within the architectural --
 3 A. On a building like this, it would have been known by
 4 a competent architect.
 5 Q. Thank you.
 6 Can I then turn to a different topic again, namely
 7 fire safety advice, and I want to ask you something
 8 about the fire safety strategy reports in general terms
 9 and some questions about Exova's appointment.
 10 Can we go first to Ms Menzies' report at
 11 {BMER0000004/97}, please. She says there at
 12 paragraph 305, a quarter of the way down that page:
 13 "The Exova fire strategy {EXO00001106} made no
 14 reference to alterations to the external walls of the
 15 building; it set out that the changes were thought not
 16 to adversely affect 'external fire spread' but 'this
 17 will be confirmed by an analysis in a future issue of
 18 this report'. It was/is not unusual for a B4 'analysis'
 19 of external fire spread to be submitted after a
 20 conditional decision has been issued; however any
 21 decision should have requested submission of the
 22 details."
 23 Now, this would be the conditional rejection or
 24 approval of the full plans application.
 25 Do you agree with her opinion from an architect's

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1 perspective?
 2 A. Yes, I don't have a problem with that, no.
 3 Q. You say in your report, and just for the transcript,
 4 this is at 4.1.33 of your report at {PHYR0000029/12}:
 5 "It is very important to note that the principal
 6 components/products/materials that make up the
 7 over-cladding cannot be considered in isolation."
 8 Now, is a consequence of your view which I've just
 9 quoted to you that a full analysis of the façade system
 10 for the purposes of compliance with B4 of the Building
 11 Regulations depended on the person doing the analysis
 12 having full details of the final materials decided upon
 13 for installation?
 14 A. Yes, I think that follows, yes.
 15 Q. So that would include -- and I'm inviting you to
 16 agree -- the PIR insulation and the ACM panels with a PE
 17 core?
 18 A. Yes.
 19 Q. Do you consider that a full analysis then couldn't be
 20 undertaken by Exova or any other fire safety engineer
 21 until the NBS specification had been finalised and
 22 provided in November 2013, or perhaps January 2014?
 23 A. It could have been done in principle, but the
 24 finalisation of the fire safety report would have been
 25 dependent on the finalisation of the proposals.

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1 Q. When you say the finalisation of the proposals, do you
 2 mean the final decision to procure and install
 3 a particular product?
 4 A. Yes.
 5 Q. So taking the ACM PE panels, the decision to adopt those
 6 was made at various times, but during a period between
 7 May and September 2014; are you saying that during that
 8 period, and only during that period, Exova would have
 9 been able to do the full analysis that they have
 10 indicated they would do?
 11 A. The timeline becomes quite complicated here. I almost
 12 want to set the timeline out on the table. But there
 13 was information coming out of the design team in Exova's
 14 direction, the C and the D report, that gave plenty of
 15 information upon which they could get their teeth into
 16 and pass commentary, and should have in my opinion
 17 passed commentary as the design developed. That would
 18 have put right errors that were being made from the
 19 beginning.
 20 The final sign-off of that would have required them
 21 to have been given the drawings and specification of the
 22 proposal following any value engineering and anything
 23 else that had been done to it. But they had certainly
 24 plenty to pick up along the way.
 25 Q. Would you consider as an architect that the pre-tender

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1 fire strategy reports, by which I mean the design note
 2 and the three issues of the outline fire safety strategy
 3 done by Exova between October 2012 and 7 November 2013,
 4 no longer reflected the proposals, given the changes
 5 that were then made in terms of the materials specified?
 6 A. I've only looked at the fire report from the point of
 7 view of the overcladding. It dealt with many other
 8 issues, but I've looked at it from the point of view of
 9 the overcladding itself.
 10 With that said, could I ask you to give me the
 11 question again?
 12 Q. I might try it differently.
 13 Given that in November 2013, and let it be assumed
 14 only a week or two after the last of the issues of the
 15 outline fire safety strategy --
 16 A. And that's when they were going out to employer's
 17 requirement tender?
 18 Q. Yes.
 19 A. Yes.
 20 Q. At that stage, we've seen the NBS specification, which
 21 contains FR5000 for the insulation and zinc for the
 22 rainscreen, but with the set of alternatives we saw --
 23 A. Yes.
 24 Q. -- at H92 in the NBS specification. At that stage,
 25 would the reasonably prudent architect go back to Exova

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1 and ask them now to produce their report, their B4
 2 analysis, on the basis of those materials?
 3 A. Yes, I think in co-ordinating their work they would --
 4 preferably earlier than that they would have -- it
 5 didn't all just happen in the last moments. That
 6 employer's requirements document took a good few weeks
 7 to pull together. They would have been able to have
 8 asked Exova to check that, as it was looking at that
 9 time. It's not a mad scramble on the eve before the
 10 issue. In the run-up to that, documents have been
 11 published. They should have asked them to check and it
 12 comment.
 13 Q. Breaking that down further and moving forward in time
 14 into 2014, after Rydon had been identified as the
 15 winning main contractor, do you think that a reasonably
 16 prudent or reasonably competent architect would have
 17 then gone back to Exova and asked them to produce the B4
 18 analysis once the identification of the rainscreen had
 19 been arrived at?
 20 A. Absolutely.
 21 Q. Between May and September 2014?
 22 A. Absolutely.
 23 Q. And the same question in relation to RS5000, as of
 24 August 2014?
 25 A. Yes, yes. I'm not quite clear in my mind how the switch

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1 from FR to RS was communicated to the architect.
 2 Q. Given the changes from the specification of the
 3 rainscreen cladding material and the insulation in the
 4 NBS specification that then occurred during 2014, after
 5 Rydon had been appointed, do you consider that the
 6 reasonably competent architect ought to have advised
 7 Rydon that the pre-tender fire strategy reports no
 8 longer reflected the proposals and needed to be
 9 revisited?
 10 A. Yes, yes.
 11 Q. Thank you.
 12 Now, it appears from the evidence, and take this as
 13 an assumption from me, that Rydon took the decision not
 14 to appoint Exova or any fire safety engineer
 15 post-novation, or, at the very least -- let me put it
 16 the other way round -- no decision was taken to that
 17 effect.
 18 Is it correct that, under its appointment with the
 19 TMO, an architect would have expected Exova to provide
 20 that advice?
 21 A. Rydon did not take Exova on.
 22 Q. No.
 23 A. Studio E know or should have known that there's
 24 outstanding information that's never been closed off.
 25 They should have either been making it very, very clear

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1 to Rydon that there was a need for a specialist
 2 consultant to be appointed by Rydon in the absence of
 3 Exova to complete that work, or they should have made it
 4 clear that they were going to have to pursue that
 5 through Exova under Exova's appointment to the TMO.
 6 SIR MARTIN MOORE-BICK: I'm sorry, can I just ask you this:
 7 we have now got to the stage where Studio E are
 8 a consultant to Rydon.
 9 A. Yes.
 10 SIR MARTIN MOORE-BICK: Exova are still a consultant to the
 11 TMO. What status does the architect have to start
 12 requiring Exova to do work for the TMO?
 13 A. I don't think the architect has any authority to -- the
 14 architect is no longer the agent of the TMO and cannot
 15 therefore instruct work, particularly if it's going to
 16 cost money, from another party. But the architect has
 17 a new client, which is Rydon.
 18 SIR MARTIN MOORE-BICK: I understand that the architect in
 19 your view should tell Rydon that there's work that
 20 remains to be done. I don't have any difficulty with
 21 that. It was just your next stage, that they should
 22 take it up with Exova, that I was questioning.
 23 A. Yes, I'm perhaps being a little informal there. They
 24 should have satisfied themselves that it was being dealt
 25 with somewhere, and maybe they needed to say to Rydon,

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1 "Please get in touch with the TMO and ensure that Exova
 2 have the proper authority and instruction to answer
 3 questions that we have".
 4 SIR MARTIN MOORE-BICK: In the end, is it for the architect
 5 or for the design and build contractor to decide whether
 6 to obtain further information of that kind?
 7 A. All of the design and build contractors that my firm,
 8 when I was with it, have had experience of have, as
 9 I understand it, because I haven't been involved with
 10 them all, insisted on having a specialist fire
 11 consultant appointed. If they did not do that, my
 12 colleagues would have recommended it very strongly to
 13 the design and build contractor. So at that point there
 14 would be a recommendation that this report has
 15 outstanding issues, it's come forward and it's got
 16 outstanding issues, they've got to be closed off.
 17 SIR MARTIN MOORE-BICK: Yes. All right. That's perhaps as
 18 far as we can take it.
 19 Yes, Mr Millett.
 20 MR MILLETT: It may be, and there are perhaps a few loose
 21 strands that I just want to pull on, if I can.
 22 Now, we know from the appointment with TMO that
 23 Exova had that they were obliged to provide advice up to
 24 RIBA work stage F unless the appointment was terminated.
 25 Now, let's proceed on the basis that I'm correct about

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1 that.
 2 At the time of the tender, the design had reached
 3 work stage E, I think, or perhaps F1.
 4 A. Yes.
 5 Q. If there was any work to do to take it firmly into
 6 stage F, is it your view that Rydon was entitled to rely
 7 on Exova fulfilling its outstanding obligations under
 8 its appointment to the TMO --
 9 SIR MARTIN MOORE-BICK: Is that one for Mr Hyett?
 10 MR MILLETT: Well, it is, because --
 11 SIR MARTIN MOORE-BICK: Perhaps we should rephrase the
 12 question.
 13 MR MILLETT: All right.
 14 From the prudent architect's point of view, having
 15 been, as it were, novated now to Rydon, would that
 16 prudent architect be entitled to expect Exova to
 17 continue to fulfil its obligations under its appointment
 18 to the TMO and continue to provide advice up to the end
 19 of its retainer at stage F?
 20 A. I think I can best answer that by saying this is
 21 a pretty unusual and unsatisfactory situation. I don't
 22 know how unusual it is, actually. Again, I've never
 23 done an audit of that. But it's a pretty unsatisfactory
 24 situation, and I think that the architect, in terms of
 25 the safety of the project and responsibility for the

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1 project and to his new client, needs to make sure that
 2 this matter is dealt with.
 3 So perhaps the architect should speak to the
 4 contractor client and say, "Will you give me authority
 5 to go and speak to the TMO and make sure that we have
 6 an ongoing arrangement with Exova, informal as it might
 7 be, that allows us to get the information we need?" But
 8 this needed to be closed out.
 9 Q. When you say this needed to be closed out, what's the
 10 "this"?
 11 A. The many times repeated two lines.
 12 Q. Yes. So the production or confirmation through
 13 an analysis in a future issue of this report?
 14 A. Yes, which in themselves have a horrible ambiguity in
 15 the line anyway, but we know what we're talking about,
 16 yes.
 17 Q. In your experience and in these particular
 18 circumstances, again from a prudent architect's point of
 19 view, would you expect a design and build contractor or
 20 a client in the position of TMO to ordinarily ask the
 21 architect to make sure that the specialist fire safety
 22 engineer had the information necessary to be able to
 23 deliver the advice up to stage F?
 24 A. That question is: after novation, the architect is now
 25 novated?

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1 Q. Yes.

2 A. The design and build contractor is offering himself as

3 a design and build contractor -- not just any

4 contractor, a design and build contractor -- with

5 management skills. They're going to manage the ongoing

6 process of design development. I think that they should

7 have taken the driving seat here and ensured that

8 a proper audit was done on the employer's requirements

9 documentation to make sure that it was complete and that

10 any gaps were identified and instructions were given to

11 fill them. So I think that is my answer, yes.

12 Q. Just to tie up the I think one remaining loose end on

13 this -- you may already have answered this question, so

14 forgive me, Mr Hyett -- in your opinion, ought the

15 reasonably competent architect in this situation to have

16 made it clear to the design and build contractor that

17 the work of the specialist fire consultant hadn't been

18 completed under that fire consultant's pre-novation

19 appointment?

20 A. Yes, that is correct. Why I hesitated is: yes, but not

21 solely the architect. There are a number of parties

22 here. But yes, the architect as well.

23 Q. Yes.

24 In your experience, would an architect novated to

25 the design and build contractor ever insist on the

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1 appointment of a specialist fire safety consultant on

2 a project such as this?

3 A. I said this earlier in my evidence, that some architects

4 would be very much more comfortable doing a building

5 like this because they'd done many of them. If they

6 felt very comfortable, no. But you asked me earlier on:

7 should an architect assess their own abilities? I think

8 this architect should have considered its own experience

9 and abilities. This was the first time for a building

10 of this type, and at one level it's pretty complicated.

11 They could have given the strongest recommendation. If

12 the contractor was not willing to accept that

13 recommendation, then it was within their powers to say,

14 "Well, we cannot continue on that basis".

15 Q. Yes, I'm really just asking --

16 A. That would have been a wise thing to do.

17 Q. Yes, it may have been the wise thing to do. What I'm

18 really after is your opinion as an expert hypothetical

19 reasonably competent architect: would that person

20 novated to the D&B contractor, as we've seen here,

21 insist on or advise in strong terms that its client, the

22 D&B contractor, should appoint or take over the

23 appointment of the specialist fire safety consultant on

24 a project such as this?

25 A. Appoint another or take that one over, that

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1 recommendation should have been clear. They should have

2 said, "We need that help to do this properly".

3 Q. And if the architect didn't do that, in your opinion

4 would they be falling short of the standards expected of

5 a reasonably competent architect?

6 A. If they weren't absolutely confident about their own

7 ability alone, then they were falling short. I'm sorry,

8 I've qualified it in that way because some architects

9 would have that competence, but I think these architects

10 should have appreciated that they didn't, that it's

11 outstanding, it needs to be dealt with, and they should

12 have given the strongest recommendation.

13 Q. Same question again where the circumstances become that

14 there is a material change in the materials specified

15 with the tender documentation.

16 A. Yes.

17 Q. Can we now turn to your supplemental report, please, at

18 page 5, {PHYS0000005/5}. You can see paragraph 3.1.6.5

19 on that page, and you say there:

20 "... if, as I infer from its statement, Exova is

21 suggesting that the 'cladding system' includes the

22 entirety of the over-cladding work that was carried out

23 under the 2012-16 Works (which essentially comprised the

24 thermal insulation, rainscreen cladding, cavity barrier

25 arrangements, windows together with their infill panels

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1 and the internal window head, jamb and sill interfaces),

2 it is misleading for Exova to claim, as it does at

3 paragraph 5.1, that its 'work preceded the critical

4 decisions in relation to the cladding system', and as it

5 does at paragraph 6.1(A)(3) 'that every critical

6 decision in relation to the cladding system was taken

7 after that date."

8 You take issue with that, and I think you also go on

9 to say in the next paragraph:

10 "On the contrary, two fundamental decisions relating

11 to elements of the over-cladding work (one relating to

12 the choice of a PIR product for the thermal insulation

13 and the other relating to the extent and disposition of

14 cavity barriers) were made prior to November 2013."

15 Now, it's right, I think, that Celotex FR5000 was

16 specified in H92 of the NBS specification, as we've

17 seen. Studio E didn't provide Exova with a draft copy

18 of the NBS specification.

19 In those circumstances, Mr Hyett, would you expect

20 the reasonably competent architect to do so?

21 A. Yes, yes.

22 Q. Would you expect the reasonably competent architect to

23 ask the specialist fire safety consultant expressly for

24 advice in respect of the materials to be specified

25 within the NBS specification?

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1 A. Yes, the architect needs to be comfortable that that
 2 overlapping is compliant and --
 3 Q. I think you told us earlier that you would also expect
 4 that view to be sought from the specialist
 5 fire consultant in relation to the cavity barrier
 6 strategy at that stage; yes?
 7 A. Yes.
 8 Q. Or you would expect the architect to read off other
 9 advice provided by the specialist fire safety consultant
 10 when compiling the NBS, I think you have made that
 11 point.
 12 A. Correct, yes.
 13 Q. In September 2014, and indeed March 2015, Studio E did
 14 seek some advice from Exova in respect of the
 15 cavity barrier placement or location, and we've seen
 16 some of that before.
 17 Is your view that Studio E ought, as a reasonably
 18 competent architect, to have sought such advice earlier
 19 in the design process?
 20 A. Yes, absolutely.
 21 Q. And, indeed, in respect of the cavity barrier strategy
 22 in its entirety?
 23 A. Yes.
 24 Q. I think you clarified that before.
 25 On that, do you think that Studio E ought, acting as

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1 a reasonably competent architect, to have involved Exova
 2 in those decisions?
 3 A. Yes. We're now pre-novation. The architect is the lead
 4 consultant responsible for --
 5 Q. No, we're post-novation.
 6 A. Oh, sorry, I beg your pardon.
 7 Q. September 2014/March 2015 is post-novation.
 8 A. Right. So could you ask the question again?
 9 Q. Yes. Should Studio E, as a reasonably competent
 10 architect, have sought the advice they did in
 11 September 2014 and March 2015 at a much earlier stage,
 12 namely pre-tender?
 13 A. Yes, absolutely.
 14 Q. Yes, I see.
 15 A. I'm sorry, that's correct.
 16 Q. Yes, yes.
 17 Can I then turn to the topic of value engineering,
 18 and I want to ask you some brief questions on that
 19 subject.
 20 Can I ask you to look at {PHYR0000027/4}, please.
 21 You say at paragraph 2.1.8, in relation to
 22 Dame Judith Hackitt and her report:
 23 "... I believe that Dame Judith Hackitt is correct
 24 in suggesting that the culture within the UK
 25 construction industry has been orientated with an

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1 emphasis towards cost and value engineering at the
 2 detriment of safety. Of particular relevance to the
 3 circumstances of Grenfell is the following quote that
 4 alludes to a tendency to transfer of responsibility for
 5 issues relating to safety ever further
 6 'down-stream' ..."
 7 Then you quote from the final report.
 8 Do you agree that this culture does not excuse the
 9 reasonably competent architect in the UK at the time of
 10 the Grenfell Tower project from considering the safety
 11 of the proposed changes brought about by a value
 12 engineering process?
 13 A. I do.
 14 Q. And that it would be so in relation to whether the
 15 process related to drawings or to materials or products
 16 specified?
 17 A. Yes, correct.
 18 Q. Do you believe that the phrase "value engineering" had,
 19 by 2012, become a euphemism for cost-cutting?
 20 A. I do.
 21 Q. Do you agree that in a true value engineering process,
 22 the functionality of design would either be preserved
 23 for less cost or improved for the same cost as
 24 originally proposed?
 25 A. I'm sorry, Mr Millett, I've got to be very careful with

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1 answers like the one I just gave. Could you re-state
 2 the question about euphemism?
 3 Q. Yes. Do you believe that the phrase "value engineering"
 4 had, by 2012, become a euphemism for cost-cutting?
 5 A. Difficult to make a generalisation. Many design and
 6 build contractors are highly competent and highly
 7 responsible and will interrogate a design with great
 8 effect and find cheaper but not worse -- less expensive
 9 is a better term -- less expensive ways of doing
 10 something. That is value engineering, and that's very
 11 useful, and I don't want to give an answer that would
 12 dismiss the good quality work of many, many good design
 13 and build contractors.
 14 Q. Relating that back to your opinions about the Hackitt
 15 report that I've shown you at paragraph 2.1.8 in your
 16 report --
 17 A. Yes.
 18 Q. -- do you detect, looking back on it, that in the period
 19 2012 to 2016, value engineering had become part of the
 20 process or part of the exercise whereby a transfer of
 21 responsibilities for issues relating to safety went ever
 22 further downstream, as you put it?
 23 A. I'm not sure I can link the two of those together.
 24 Frantic cost-cutting exercises are common in the
 25 building industry, and that is not a good thing. In

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1 that process, many decisions that should be taken
2 earlier are left until later, and a very convenient way
3 of dealing with responsibility is effectively to package
4 it and pass it elsewhere, and I think that there has
5 been a tendency to do that.

6 The end result of that, in this situation, is that
7 people who have not had proper training to make
8 decisions they are making, often against desperate
9 constraints of time, and isolated from those that could
10 advise, are making decisions about design and work, and
11 we see it with faulty specification and faulty design
12 drawings.

13 That's a long answer, I'm afraid, but our industry
14 is not in good shape in this respect, in many of its
15 constituent parts.

16 Q. Leaving aside the question of whether the words "value
17 engineering" had become a euphemism for cost-cutting, do
18 you detect in your work, looking back on the period,
19 that the principles behind value engineering had become
20 compromised, such that people then approached the
21 concept of value engineering without adequately taking
22 into account the importance of maintaining functionality
23 and performance?

24 A. I have a sense that that's taken place -- I don't want
25 to offer a holier than thou response, but I have a sense

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1 that that has been a pressure within the industry, but
2 I'm also -- I don't have any direct experience of that.
3 Those that I have worked with have taken the work
4 immensely responsibly. So value engineering -- I've
5 never been under pressure to compromise safety or
6 anything like that by contractors who are bringing great
7 pressure to bear in terms of achieving greater cost
8 efficiency. But I have a sense that that is prevalent
9 in the wider industry. But it is only a sense.

10 Q. Do you consider that the role of the reasonably
11 competent architect in a value engineering process,
12 properly so-called and properly addressed, would be to
13 advise its client on the suitability of the proposed
14 substitutions by way of materials or products?

15 A. Absolutely.

16 Q. Can I then turn to the final topic, which is designing
17 for disability.

18 When acting as a lead consultant or lead designer,
19 from the outset of a project, with responsibility for
20 design co-ordination, is it an architect's role either
21 itself to provide or at least to identify the need for
22 specialist advice on access or functionality for those
23 with restricted mobility and other disabilities?

24 A. I believe that is the case.

25 Q. Would it be incumbent on the reasonably competent

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1 architect as a lead designer to make sure that the
2 correct advice was given to the client as to the
3 requirements in architectural terms for people with such
4 disabilities?

5 A. Well, the correct advice has to be obtained by the
6 design team and the design must reflect that advice,
7 yes.

8 Q. Can I ask you then to turn to {SEA00006551}, please.
9 This is an email from Adrian Jess of Studio E on
10 12 November 2012 to Andrew McQuatt of Max Fordham, and
11 he is answering the question posed by Andrew McQuatt the
12 day before:

13 "Hi Adrian,

14 "Are there going to be any new refuge areas in
15 lobbies? If there are I think I will need to provide
16 a refuge telephone system to provide two-way voice
17 communication between the fire refuge and reception. It
18 would be good to know if you covered this with
19 building control."

20 Mr Jess' response is:

21 "No refuges.

22 "Mass evacuation is not part of the existing fire
23 strategy and we are following their lead. Generally
24 people stay in their flat unless their flat is on fire.
25 I assume the intention is for vulnerable people to

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1 refuge in other flats on the same floor before being
2 evacuated by the Fire Brigade."

3 Do you consider it reasonable for an architect to
4 take the view that they would simply follow the client's
5 lead as to what was required rather than giving advice
6 about what was required in this respect?

7 A. Where is Adrian Jess from, sorry?

8 Q. He is Studio E.

9 A. Right. I'm just going to read it again with that in my
10 mind.

11 (Pause)

12 At the time, I think Mr Jess' answer seems to me to
13 be a reasonable answer.

14 Q. Now, I put it to you on the basis that he was proposing
15 to follow the client's lead. It is of course possible
16 that what he means is following building control's lead,
17 given that it's building control that's referred to in
18 the third sentence of Mr McQuatt's email.

19 That being so, do you think it would be reasonable
20 for an architect to take the view that they would simply
21 follow building control's lead, whatever that was, in
22 this respect, rather than actually thinking about it and
23 giving advice about what was required to its client?

24 A. At that time, I think we all had a great deal of
25 confidence in the compartmentation, stay-put strategy,

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1 and I think that the response is reasonable. Today it
 2 would be very different .
 3 Q. Well, I understand that, and thank you.
 4 Let me just press you a little bit more: would you
 5 agree with me that the reasonably competent architect
 6 shouldn't make assumptions about what the fire strategy
 7 for people with disabilities was, but should consult
 8 with the fire engineer, if there was one, as there was,
 9 as to the nature of that strategy?
 10 A. Or the disability consultant.
 11 Q. So yes, or the disability consultant; is that your
 12 answer? Because if so, it answers my next question.
 13 A. It's very difficult . Ideally , yes. I'm not sure how
 14 heavily I would criticise them for not. But ideally ,
 15 yes.
 16 Q. And would a reasonably competent architect consult
 17 a disability design consultant instead of just
 18 proceeding on an assumption?
 19 A. I think it's the same answer.
 20 Q. Yes, thank you.
 21 SIR MARTIN MOORE-BICK: Well, now, would he be expected to
 22 go himself to a disability consultant, or -- I suppose
 23 this is before there's any novation, so he is the
 24 principal designer, isn't he?
 25 A. Yes.

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1 SIR MARTIN MOORE-BICK: So I think the question is whether
 2 you think that Studio E fell below the standard
 3 reasonably to be expected by not making the running
 4 going to a disability consultant?
 5 A. Well, if I could just preface the answer I'll give: on
 6 projects that I've recently been involved with, we go
 7 straight to a disability consultant because of the
 8 complex nature of that building type. I'm now talking
 9 about the Optus Stadium.
 10 This building was already in operation. It was
 11 managed by a professional client organisation. The
 12 architect is part of a team that are making various
 13 changes to the building. I don't think that those
 14 changes, in the upper parts of the building, were going
 15 to be significant to the organisation of escape and the
 16 layout. They were in the lower part of the building.
 17 It was important, therefore, to have an expert
 18 fire consultant in for that lower area.
 19 I'm not sure that an architect would necessarily
 20 have required a disability consultant to step into
 21 a project of this kind because it was already occupied,
 22 already established in its operation.
 23 SIR MARTIN MOORE-BICK: Thank you.
 24 MR MILLETT: Yes, thank you.
 25 Well, Mr Hyett, I've come to the end of my prepared

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1 questions, you will be glad to hear, and in any event,
 2 Mr Chairman, this is probably the right time for
 3 a break.
 4 SIR MARTIN MOORE-BICK: Yes.
 5 MR MILLETT: If we take a break now, I can then sweep up any
 6 further questions that I may have or others outside this
 7 room may have.
 8 SIR MARTIN MOORE-BICK: Yes, that would be very convenient.
 9 Well, Mr Hyett, we will have a break now. We will
 10 come back at 3.30 and see if there are any more
 11 questions or not. In the meantime, please, as before,
 12 don't talk to anyone about your evidence while you're
 13 out.
 14 THE WITNESS: Thank you.
 15 SIR MARTIN MOORE-BICK: Thank you, if you would like to go
 16 with the usher, please.
 17 (Pause)
 18 3.30, then, please. Thank you.
 19 (3.15 pm)
 20 (A short break)
 21 (3.40 pm)
 22 SIR MARTIN MOORE-BICK: Right, Mr Hyett, we will see if
 23 there are any more questions for you.
 24 Mr Millett?
 25 MR MILLETT: Mr Chairman, yes, just one or two topics.

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1 First, Mr Hyett, have you ever applied the linear
 2 route to compliance with sections 12.6 to 12.9 of
 3 Approved Document B in your practice?
 4 A. Yes. Yes.
 5 Q. You have?
 6 A. Yes.
 7 Q. Have you ever personally prepared a specification for
 8 a rainscreen cladding system in your practice?
 9 A. Yes. Not me, but yes.
 10 Q. You say not me but yes; does that mean in your practice?
 11 A. I have not, but the practice has.
 12 Q. Right. Were you involved yourself in that?
 13 A. No, not in that, no. I beg your pardon, in this
 14 country, no. I was involved in the one in Australia .
 15 Q. Thank you.
 16 Have you ever developed a cavity barrier strategy
 17 for a high-rise residential property in practice?
 18 A. No, I have not.
 19 Q. Has your practice?
 20 A. Our practice is 1,500 people globally. Somewhere, they
 21 will have done it. Many times, I expect.
 22 Q. Right.
 23 Can I then turn to a different topic.
 24 Where a value engineering exercise, properly
 25 so-called, takes place and produces a new product to be

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1 specified and installed on a building in place of
 2 a product previously specified, would you expect the
 3 reasonably competent architect to maintain a clear
 4 documentary record of the change?
 5 A. Yes.
 6 Q. What format would that clear documentary record take?
 7 A. When, in terms of what stage it's at, what was before,
 8 what is being proposed instead, and any information to
 9 make absolutely clear the status of the before and the
 10 after, which is drawings and specification notes.
 11 Q. Would you expect the reasonably competent architect to
 12 set up or agree with the design and build contractor,
 13 with whom he was now working, a change control structure
 14 or system?
 15 A. Yes.
 16 Q. And --
 17 A. Well, I would expect it to be set up -- whether it was
 18 initiated from the design and build contractor or the
 19 architect, I would actually expect the design and build
 20 contractor to set it up. But in the absence of that,
 21 the architect should call for it.
 22 Q. Right.
 23 Would you expect the record, whether it's a system
 24 of change control or any other sort of system, to
 25 contain an investigation of how the product maintains

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1 the performance and functionality of the previously
 2 specified product?
 3 A. And compliance, yes.
 4 Q. And compliance?
 5 A. Yes.
 6 MR MILLETT: Yes, thank you very much.
 7 Well, Mr Hyett, thank you. I have no further
 8 questions for you, and it only remains for me to express
 9 the gratitude of both my team and of myself for your
 10 assistance, both over the last three days and in
 11 constructing the model, and in your report work
 12 generally. So thank you very much. Those are all the
 13 questions I have for you.
 14 THE WITNESS: Thank you very much.
 15 SIR MARTIN MOORE-BICK: I should extend the gratitude of
 16 the Inquiry as a whole and certainly the panel for all
 17 the work that's gone in to producing your report, that
 18 splendid model, which was very illuminating, and the
 19 time you have taken to come here and give your evidence.
 20 We are really grateful indeed, so thank you very much.
 21 THE WITNESS: Thank you.
 22 Our entire industry, sir, and all the professions
 23 within it, and my own included, I think there has to be
 24 a lot of very careful contemplation from here on.
 25 SIR MARTIN MOORE-BICK: Well, thank you for your part in

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1 what we're doing.
 2 THE WITNESS: Thank you very much.
 3 MR MILLETT: Thank you, Mr Hyett.
 4 SIR MARTIN MOORE-BICK: Thank you.
 5 (The witness withdrew)
 6 SIR MARTIN MOORE-BICK: Well, Mr Millett, that I think
 7 concludes the proceedings in Module 1. Is that right?
 8 MR MILLETT: Mr Chairman, I'm glad to say that it concludes
 9 all the evidence in Module 1, the factual and expert
 10 evidence. There are of course closing submissions or
 11 statements to be made for Module 1 at the end of
 12 Module 3. But for the time being, that is the end of
 13 Module 1, I am delighted to be able to tell you that,
 14 and others who are listening to this, and it therefore
 15 follows that Module 2 will begin, without pause for
 16 breath, tomorrow morning.
 17 SIR MARTIN MOORE-BICK: So we will call a halt there for
 18 today, but we will meet again tomorrow morning at
 19 10 o'clock, when we will embark upon Module 2.
 20 MR MILLETT: Thank you very much.
 21 SIR MARTIN MOORE-BICK: Good, thank you very much.
 22 10 o'clock tomorrow, please. Thank you.
 23 (3.45 pm)
 24 (The hearing adjourned until 10 am
 25 on Thursday, 5 November 2020)

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