

OPUS 2

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Grenfell Tower Inquiry

Day 63

November 2, 2020

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1 Monday, 2 November 2020
 2 (2.00 pm)
 3 SIR MARTIN MOORE-BICK: Good afternoon, ladies and
 4 gentlemen, and welcome to today's hearing, at which
 5 we're going to hear evidence from Mr Paul Hyett, the
 6 expert architect instructed by the Inquiry.
 7 However, before we do that, in the light of the
 8 Prime Minister's announcement that the Government
 9 intends to introduce a nationwide lockdown from
 10 Thursday, I think it may be helpful just to say a little
 11 bit about the Inquiry's position.
 12 The Inquiry is a workplace which already has robust
 13 measures in place to enable us to conduct hearings
 14 safely and in accordance with Government guidelines.
 15 That means we can continue to sit during the period of
 16 renewed restrictions. Of course, depending on how
 17 things develop, there may come a point at which the
 18 position needs to be reconsidered. But for now, at any
 19 rate, like the courts, we shall continue to function in
 20 accordance with the thorough risk assessment process
 21 undertaken by the Government Property Agency.
 22 Protecting the health and safety of all continues to
 23 be our highest priority, so we may find it necessary to
 24 depart from our established procedures from time to
 25 time.

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1 In order to keep the number of people in the
 2 building to a minimum, we shall be asking those legal
 3 representatives who wish to make oral opening statements
 4 for Module 2 to do that by videolink.
 5 Finally, may I say this: I'm very grateful to all
 6 those -- particularly, if I may say so, to those behind
 7 the scenes -- whose support makes it possible for us to
 8 continue our hearings under what are undoubtedly
 9 difficult circumstances.
 10 Yes, Mr Millett.
 11 MR MILLETT: Mr Chairman, thank you very much.
 12 I now call Mr Paul Hyett.
 13 MR PAUL HYETT (affirmed)
 14 SIR MARTIN MOORE-BICK: Thank you very much, Mr Hyett.
 15 Now, are you going to sit down to give most of your
 16 evidence?
 17 THE WITNESS: Yes, sir.
 18 SIR MARTIN MOORE-BICK: If so, please do so, and make
 19 yourself comfortable.
 20 THE WITNESS: Thank you.
 21 Questions from COUNSEL TO THE INQUIRY
 22 MR MILLETT: Yes.
 23 Mr Hyett, thank you very much for coming to
 24 the Inquiry and giving us your evidence and your
 25 presentation today and over the next day or so. We are

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1 very grateful to you for your expertise as an expert to
 2 the Inquiry, and for your assistance in that regard.
 3 We are going to be examining your work as an expert,
 4 as I say, for the next two days. During that time, you
 5 obviously may have to move around the room a little bit
 6 in order to give your presentation. May I ask you,
 7 please, to keep your voice up and speak as clearly as
 8 possible so that the transcriber can get down everything
 9 you are saying.
 10 Also -- and I say this to all the witnesses -- don't
 11 nod or shake your head; say "yes" or "no" as the case
 12 may be.
 13 A. I understand.
 14 Q. Thank you very much.
 15 We will take a break at a convenient moment this
 16 afternoon, and that, I think, will be after the
 17 presentation that you're going to give us.
 18 Can I start, though, just with some formal matters.
 19 Is it right that, by way of a letter of instruction
 20 of 15 October 2018 -- which, for the transcript, is at
 21 {PHYR00000032} -- you were instructed by the Inquiry?
 22 A. Yes, that is correct.
 23 Q. You were instructed to do the following, I think, and
 24 just agree with me or qualify this if you need to:
 25 first, to comment on the architect's initial terms of

3

1 appointment for the refurbishment of Grenfell Tower
 2 between 2012 and 2016.
 3 A. Correct.
 4 Q. And also upon the services carried out by others that
 5 would normally fall within the scope of the architect's
 6 appointment.
 7 A. Correct.
 8 Q. You were also, I think, asked to report on the
 9 development of the design as prepared by the architect
 10 from concept through to final design, commenting on the
 11 selection of materials and construction systems and
 12 their incorporation into the design?
 13 A. Correct.
 14 Q. Were you also asked to advise on whether the
 15 documentation and advice given by the architect during
 16 the refurbishment works complied with the requirements
 17 of the Building Regulations and the relevant guidance?
 18 A. Yes, I was.
 19 Q. And also with the standards of service to be reasonably
 20 expected of an architect in that regard?
 21 A. Yes.
 22 Q. Also, I think it's right that you were asked to advise
 23 on whether the as-built condition of the building
 24 complied with the documentation provided by the
 25 architect.

4

1 A. As far as I could see it, yes.
 2 Q. Yes.
 3 Finally, insofar as there were any departures to the
 4 required standards that you identified were concerned,
 5 to give your view as to whether those irregularities
 6 should have been identified by the architect under the
 7 scope of their appointment, and in the context of the
 8 standards of service to be reasonably expected of
 9 an architect?
 10 A. That is all correct.
 11 Q. Thank you.
 12 Now, I think it's right that that work was
 13 instructed or the subject of instructions under what was
 14 referred to as the letter of instructions, part 1 of
 15 that letter.
 16 A. Correct.
 17 Q. You produced a report for Phase 2 of this Inquiry on
 18 part 1 in October 2019, and I think that comprises
 19 an executive summary and then parts 1 to 6.
 20 A. It does.
 21 Q. In August 2020, am I right that you then produced
 22 an amended version of your report, revision 1, which
 23 corrects typographical and minor errors?
 24 A. That is correct.
 25 Q. That is accompanied by a cover sheet and an errata sheet

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1 listing all the corrections made to your original
 2 report.
 3 A. Correct.
 4 Q. Now, the revision of your report and the errata sheet is
 5 at {PHYR00000024} through to {PHYR00000037}. I'll just
 6 read those formally into the record.
 7 Can I ask you, though, to be shown
 8 {PHYR00000026/10}. Here we see a signature next to the
 9 date 5 October 2020.
 10 Is that your signature?
 11 A. That is my signature.
 12 Q. Have you read this report recently?
 13 A. Yes.
 14 Q. Subject to all of the matters that we're going to go
 15 through later, can you confirm that it comprises your
 16 true and professional opinions?
 17 A. It does.
 18 Q. You also produced a shorter supplemental report in
 19 September 2020, and this supplemental report provides
 20 additional commentary on the opinions set out in your
 21 original report in the light of the opening statements
 22 provided by various core participants to the Inquiry.
 23 I think that's right, isn't it?
 24 A. That is correct.
 25 Q. It contains a cover sheet and parts 1 to 4, and I'll

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1 just read those in. They are at {PHYS00000001} to
 2 {PHYS00000005}.
 3 If we could look at {PHYS00000001/9}, please, we can
 4 see that here again is a signature, again next to the
 5 date 5 October 2020.
 6 Is that your signature?
 7 A. It is.
 8 Q. So, just to be clear, your report and your supplemental
 9 report were actually signed by you on the same day?
 10 A. Yes.
 11 Q. Now, throughout your examination, I'm going to refer to
 12 revision 1 of your report as "your report", and your
 13 supplemental report as "your supplemental report", just
 14 so we have the lines clear.
 15 A. I understand.
 16 Q. Are the factual matters set out in your report and
 17 supplemental report true to the best of your knowledge
 18 and belief?
 19 A. Yes.
 20 Q. Does this supplemental report accurately set out your
 21 true and professional opinions on the matters you were
 22 asked to consider?
 23 A. It does.
 24 Q. You were also asked by the Inquiry to make certain
 25 recommendations about what, if any, changes you would

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1 advise should be made to the relevant legislation,
 2 regulations, guidance and industry practices --
 3 A. Yes.
 4 Q. -- to address any shortcomings that you may have found
 5 as a result of your work as an expert in this Inquiry.
 6 A. That is in the first letter of instruction.
 7 Q. Yes, and that work I think was instructed under what's
 8 referred to in that letter of instruction as part 2; is
 9 that right?
 10 A. Correct.
 11 Q. Now, your work under part 2 will be presented in
 12 a further report to the Inquiry at a later date,
 13 I think, won't it?
 14 A. Correct.
 15 Q. Am I right in thinking that you have not yet completed
 16 your work on part 2?
 17 A. That's correct.
 18 Q. So, to be clear, we're only going to be examining the
 19 work you've done so far under part 1 of your
 20 instructions?
 21 A. That is my understanding.
 22 Q. Yes.
 23 Now, in section 1.1 and in appendix 4 in detail of
 24 your report, you have outlined your background and your
 25 experience relevant to matters in this Inquiry, haven't

8

1 you?
 2 A. Yes.
 3 Q. Yes.
 4 A. Yes.
 5 Q. Now, we don't need to go through all of that, there's
 6 a lot there and people can read it, but if we can
 7 summarise that together.
 8 I think it's right you have over 40 years of
 9 post-qualification experience as an architect practising
 10 in England and internationally.
 11 A. I think I registered in 1979, somewhere in there, so
 12 that would be about right, yes.
 13 Q. Is it right that, between 2004 and 2020, you were
 14 a principal at HKS Architects?
 15 A. That's correct.
 16 Q. Is it the case that HKS Architects is an architectural
 17 practice operating out of offices in London and
 18 internationally, and provides a broad range of
 19 architectural services across a wide variety of building
 20 sectors?
 21 A. That is correct.
 22 Q. You are a member, I think, of the Royal Institute of
 23 British Architects, and held the office of president of
 24 the RIBA from September 2000 until August 2002.
 25 A. Correct.

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1 Q. You are retired, I think, from HKS already, and that
 2 happened in June this year, I think?
 3 A. That's correct, yes.
 4 Q. You now run a consultancy advising on architectural
 5 services, I believe.
 6 A. Correct.
 7 Q. Now, before you were the RIBA president, you were,
 8 I think, an RIBA council member responsible for
 9 architectural education for some four years or so.
 10 A. Yes. The title was vice president, education.
 11 Q. And were you an external examiner at various
 12 universities?
 13 A. That is a separate aspect. As vice president of
 14 education, I was involved in validation visits to
 15 schools of architecture in the UK and around the world,
 16 but, quite separately from that, I have been appointed
 17 as an external examiner for parts 1, 2 and 3 at various
 18 schools of architecture.
 19 Q. Did you report to the Burton Review of Architectural
 20 Education?
 21 A. I did indeed.
 22 Q. And then act later on as a deputy chair to the
 23 Stansfield Smith Review of Architectural Education?
 24 A. That is correct.
 25 Q. I think I'm right in saying that you are also

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1 an honorary fellow of the American Institute of
 2 Architecture, the Royal Society of Architects in Wales
 3 and the Chartered Association of Building Engineers.
 4 A. Correct.
 5 Q. Before I ask you any detailed questions, you have
 6 prepared a presentation, I think, addressing the
 7 principal features of the as-built design of the
 8 external façade of Grenfell Tower and the features of
 9 your indicative approach to the design of that façade,
 10 as set out in section 3 of your report; is that right?
 11 A. That is correct.
 12 Q. Your presentation is going to be given by reference to
 13 a scale model of the as-built condition of a typical bay
 14 of the refurbished tower. That model has been built by
 15 Pipers Model Makers, hasn't it?
 16 A. Yes.
 17 Q. Mr Dominic Hayhurst, who assisted in the creation of
 18 that model, is here to assist you in this presentation,
 19 as is Felipe de Paula of RTS.
 20 A. Yes, he led a very good team.
 21 Q. Just to be clear, so everybody understands where this
 22 comes from, it's right, I think -- just confirm for
 23 me -- that the drawings that were provided to
 24 Pipers Model Makers, who then made the model, and your
 25 instructions to the model-makers have been disclosed,

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1 and for the transcript, those documents and instructions
 2 are at {PHY0000001} to {PHY0000006}.
 3 Before you start your presentation, Mr Hyett, can we
 4 please have up {PHY0000007}. This is a diagram that you
 5 have produced entitled "Model Location Key"; is that
 6 right?
 7 A. Correct.
 8 Q. I understand that you want to make reference to that
 9 during your presentation?
 10 A. Yes.
 11 Q. That's the right document, is it?
 12 A. That is correct, yes.
 13 Q. Okay.
 14 Mr Hyett, I'm going to hand over to you now in order
 15 for you to do your presentation. I am going to stay as
 16 quiet as I can, but if there are questions I have for
 17 you during the course of your presentation, I'll ask
 18 those questions. But I don't want to interrupt your
 19 flow.
 20 A. Well, Mr Millett, I would anticipate that, but if
 21 anything is unclear during the presentation, please ask
 22 me to go back and explain it again, because the model is
 23 quite complicated.
 24 MR MILLETT: Very well, I will.
 25 So, without further ado, Mr Hyett, I hand the floor

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1 to you.
 2 Thank you.
 3 Presentation
 4 THE WITNESS: Thank you.
 5 Well, I can see on the screen in front of me the
 6 model, which is behind me, and I'm going to explain this
 7 model by addressing the screen throughout. That way I'm
 8 not trying to deal with something and point to something
 9 with my back to the camera. Dominic is going to use
 10 a pointer to point to the parts of the model that I want
 11 to illustrate at any particular moment, and Felipe has
 12 a rather marvellous camera which can take us into a very
 13 close-up view, very detailed parts of the model, when we
 14 need to do that.
 15 Could I ask first of all -- no, before I go to the
 16 drawing, I'll just explain a few points for the model.
 17 On the right-hand side, the view shows the building
 18 with cladding on it, a white panel and a window.
 19 Perhaps you could point to that, Dominic. So there's
 20 the white panel. That's one of the infill panels. The
 21 window is next to it. Then above it we've got part of
 22 a spandrel panel, or two parts of spandrel panels.
 23 I say "part" because if you drop your pointer, Dominic,
 24 to the spandrel panel below, you will see two full-size
 25 spandrel panels. Then you needn't point to it, it's

13

1 evident from the camera view, on the right-hand side
 2 there's cladding over the column.
 3 That all represents the 2012 to 2016 works, as was
 4 installed on the building, and as is known as the
 5 overcladding work.
 6 The way we assembled that was to use drawings
 7 prepared by Studio E, drawings prepared by Harley, to
 8 validate information that we gleaned from those two
 9 information streams, to produce a computer model of the
 10 building and then to pass it to Pipers to put it into
 11 production. We also designed the model to help me by
 12 being available to me as a tool to illustrate the
 13 narrative which I will now offer to the Inquiry or
 14 present to the Inquiry.
 15 The middle panel there, or the middle section of the
 16 model, you can see a turquoise line to the top -- could
 17 you point to that, please, Dominic -- two vertical
 18 turquoise lines below it, and then there is a middle
 19 infill panel there. Then could you point to the two
 20 window openings -- and I say opening windows, because
 21 the pointer will go right through them. They are holes
 22 where the windows would be. I haven't put them in
 23 there, but otherwise that part of the model, which is
 24 just denoted by the turquoise, is what I call the centre
 25 bay, and that's a part of the building that lies between

14

1 the two columns. I'll define those columns in a moment
 2 for you on the plan.
 3 To the left -- Dominic, perhaps you would just mark
 4 the highlighted yellow there -- it's that area and the
 5 horizontal yellow which defines the zone which I have
 6 called the indicative approach. That is a particular
 7 part of the model which we'll deal with in detail later
 8 on.
 9 What you see in the form of the generally sort of
 10 stony-coloured façade is the original concrete external
 11 façade of the building as would have been seen before
 12 any of the work was done.
 13 You'll also see there ten little brass pins sticking
 14 out of the concrete. They weren't in the original
 15 building and they are model-makers' devices for hanging
 16 what we're going to show later on, so I would ask
 17 the Inquiry to ignore those.
 18 Could you please now point to the vertical slot
 19 between the spandrel panel and the column, and take the
 20 pointer from the top to the very bottom.
 21 Please imagine that the yellow is not there. That
 22 slot existed in the original building and is, for want
 23 of a better term, an architectural device to allow the
 24 columns to be expressed and readily seen and understood.
 25 To the left of the column, that same column, please

15

1 point to the top and the bottom parts of the spandrel,
 2 to the left of it. That spandrel panel there and the
 3 one below, that's part of the adjoining flat. We'll
 4 look at that on the plan in a moment. That's part of
 5 the adjoining one-bedroomed flat. This is showing the
 6 façade, east façade, to a two-bedroomed flat.
 7 Could you now run the pointer down the vertical
 8 chases, I've called them, but "tracks" might be
 9 an easier term, down the column. They were on the
 10 original building and they are, again, an architectural
 11 expression. They become very important later on in this
 12 narrative. Then there is a horizontal track there as
 13 well, which you can show. That's it.
 14 The yellow pieces that are in those tracks or slots,
 15 they will be featuring later because they're part of the
 16 indicative scheme, they were not on the original model,
 17 and I will explain why they're there later on. But
 18 I wish at the moment to move to the right-hand part of
 19 the model to explain that in more detail.
 20 Before I do, could you please point to the dotted
 21 line that has been painted on there. That dotted line
 22 represents the floor level of the flat above. So the
 23 concrete floor which divides this flat from the flat
 24 above spans or stretches from the turquoise line
 25 there -- point to that, please, Dominic -- from there to

16

1 the dotted line . If you can imagine that , that's
2 a concrete floor that runs the whole way along on the
3 floor above. We haven't drawn it on the floor below,
4 but the same arrangement would exist there. That's
5 important because that concrete floor represents the top
6 and the bottom compartment of that flat .

7 Behind the column -- could you point to the
8 left-hand column, please, Dominic, and if you can step
9 up on to tiptoes and point to the wall that's going
10 away -- we can see it on the screen -- that wall divides
11 the corner flat , which is shown here, the two-bedroom
12 flat , from the adjoining flat , and that is a compartment
13 wall which comes into the back of the column. So that
14 column has a compartment wall, has a compartment floor
15 below, compartment floor above. There is no
16 compartmentation on the right-hand column because it is
17 a corner column.

18 Right, before we move on with the model, I think now
19 I'd ask for the drawing to be put up on the screen.
20 {PHY0000007}. This will help us to orientate ourselves
21 on the building.

22 Mr Millett, if you don't mind, I won't go into great
23 detail about the way the building is arranged; I'm sure
24 you'll have questions that are relevant to me later on
25 in that, but suffice it to say this is the east

17

1 elevation . There are two intermediate columns you can
2 see on that elevation and two corner columns. Between
3 each of the columns is a flat . So on the right-hand
4 side you can see a little box that has been drawn at
5 level 4, and that little black box you can see on the
6 plan to the right-hand side, and that shows the part of
7 the building that is being illustrated by the model.

8 So there we have a two-bedroomed flat on that
9 corner, we have a two-bedroomed flat on the other side
10 of that elevation, and then in the middle, between the
11 two central columns, is the one-bedroomed flat. On the
12 plan it'll be evident there's a series of numbers,
13 a little bit out of focus, but 1, 2, 3, 4, 5, 6, and you
14 can see there that flats 5, 6, 2 and 3 are two-bedroomed
15 corner flats , and flats 4 and 1 are one-bedroomed
16 intermediate flats , I've called them, and then you can
17 see the staircase and the pair of lifts there.

18 The corner flats are replicated up the building, so
19 the flat above flat 6 is identical , and below likewise,
20 and the other side, flat 5, is the same as flat 6, but
21 it's what we call handed; it's the mirror image.

22 In the bottom of flat 6, or the lower part of the
23 drawing there, you can see the kitchen area and the
24 words "flat" and "6" are written on to what is the
25 living room area and to the left of the two bedrooms to

18

1 that flat .

2 In the box that has been drawn there, there are two
3 columns: there is a corner column and there is
4 an intermediate column. The corner columns were larger
5 than the intermediate columns, and it can be seen from
6 that plan that we have three intermediate columns on the
7 north elevation , three on the south, two on the east and
8 two on the west. They're all identical in size .

9 I do apologise, am I going too fast for the
10 stenographer? No.

11 The four corner columns larger than the intermediate
12 ones, they're also identical each with the other.

13 So we're going to be concentrating for the next part
14 of this presentation on the model that represents the
15 area of the building that is within that box.

16 Before you take it off, I would just like to ask
17 the Inquiry to remember that when I refer to column A5,
18 I'm talking about the corner column at the top, and B5
19 I'm talking about the intermediate column beneath it,
20 both part of flat 6.

21 Those designations have come from Dr Lane's report.
22 She very helpfully set out a grid. I don't know where
23 she got it from, but she set out a grid. So if you look
24 at the top of that drawing, starting from flat 5, corner
25 column, you've got A1, A2, A3, A4, A5, and then next

19

1 down you've got B1 through to B5, C1 through to C5 and
2 D1, 2, 3, 4 and 5. That just helps us orientate
3 ourselves always as we go, and when I refer to A5 or B5,
4 you'll know exactly where I am.

5 Could we now return the camera to the model.

6 At this stage, before we look at the right-hand part
7 of the model, I would just like to ask Dominic to please
8 touch the infill panel under the turquoise, Dominic, if
9 you would.

10 That is a part of the ribbon window system which had
11 an infill panel installed externally . The part that you
12 see there, which is solid , is a lightweight form of
13 pre-formed concrete panel which was brought to the
14 building and connected to the top of the spandrel panel
15 and bolted to the concrete floor above it . So that
16 formed the inside wall to the building, for want of
17 a better term, and between there and the outer part
18 there was a cavity .

19 Again, before we move on to the model, could you
20 point to the part of the window that is to the
21 right-hand side, closest to you, Dominic, on the
22 adjoining flat . That's it .

23 That window has been constructed by the model-maker
24 as a replica of the original window in the building, and
25 you will see that the window cill there -- could you

20

1 point to the window cill -- sits at the top of the
2 spandrel panel, which is an upstanding piece of
3 concrete, poured in situ. It sits at the top there at
4 the back of the chamfer. So the face of concrete panel
5 comes up, and then it chamfers, it tilts back in again
6 and meets the window, and this is going to be very
7 important to this presentation. So the original windows
8 were set back, and, as we know from previous evidence,
9 the windows that were installed as part of the 2012-16
10 work was set forward of that position.

11 Underneath the spandrel panel you can see
12 a combination of windows and infill panels, and that
13 would be to the flats below.

14 I think that's all I need to say about that part of
15 the model now, and I would like to invite Felipe to lead
16 the camera team to bring in another camera angle, which
17 I think is the camera up there, and that will look at
18 the edge of the new addition to the building. I'll just
19 wait for that to come up on the screen.

20 (Pause)

21 If the camera could follow the pointer, and if you
22 could first of all cast the pointer slowly from the top
23 to the bottom, but let me speak and follow the
24 narration, please.

25 At the very top there we have the turquoise, which

21

1 is part of the RS5000 insulation that's adhered to the
2 concrete panel, or fixed to the concrete panel, I should
3 say, above the horizontal cavity barrier.

4 The yellow part, next, down, is the edge of the
5 cavity barrier itself. You can't see it here because of
6 the black shadow line there, but the face of that, the
7 outside face of that, is actually black and it's made of
8 an intumescent strip, the purpose of which is to expand
9 if it's subjected to heat and, in expanding, it fills
10 the gap up to the back of the cassette.

11 It was important that the horizontal cavity barriers
12 did not touch the back of the cassettes because a rain
13 shield system does have water penetrating it and it's
14 important to let the water drain through the building.

15 If you could move on down, we have another piece of
16 turquoise there, that piece of turquoise again fixed to
17 the building.

18 We will need to go very carefully now. Could you
19 please point out the angle shelf that was fixed to the
20 top of the ribbon window system.

21 The pointer is at the top of it now, so there is
22 an aluminium shelf angle that's bolted to the structure,
23 and then a horizontal part of it comes out at the base
24 just at the window top, the pointer is on it now. So
25 that comes out there.

22

1 Could you now go down to one below on the spandrel
2 panel and show that one. There is another one here, and
3 could you start at the bottom of it and then take the
4 camera up. There it is. That goes up to the top and
5 then that comes out horizontally. Then down to the very
6 bottom, you can show the next one.

7 If you hold the camera just there, you can see
8 a replication of what I was describing at the top, which
9 is the turquoise edge of the RS5000 insulation and the
10 cavity barrier at the lower level.

11 The way in which the cladding was fixed was by
12 hanging it -- and it literally does hang, it's not
13 bolted, it hangs -- over toggles that run between the
14 channels that are affixed to the brackets. You can see
15 that arrangement there.

16 Now, we thought that this was all getting a little
17 bit difficult to show on camera like this, so I'm now
18 going to ask Dominic to assemble the building as per the
19 2012 works before us, and I will narrate that process.

20 So, evidence given to this Inquiry by the cladding
21 subcontractors' subcontractors describes the order in
22 which this work was done, and I think this is the basis
23 upon which we've created this model.

24 So the first installation was the shelf angles.
25 Could you fix those, please, Dominic. So there is the

23

1 shelf angle going across the top. That's a continuation
2 of what Dominic was pointing out with the pointer.

3 Now the one underneath the window. You will see
4 that that's inverted the other way, actually. Yes, you
5 had it upside-down as well. So that's bolted to the
6 spandrel wall and the shelf comes out horizontally above
7 the chamfer line. Right, there we go. There is the
8 bottom one.

9 So, first works done between the columns was to put
10 the three shelf angles in place.

11 The next item of work was to put in the cleats, and
12 these are small pieces which are bolted. But before you
13 actually put that on, Dominic, I'll just say, at this
14 point we think the windows were installed as well, so
15 the flats remained weathertight and comfortable. So in
16 between the top and the middle shelf angle, the windows
17 would have been installed. I'll leave that aside. We
18 haven't constructed that bit for this. We will show
19 that later.

20 Now could you put the cleats in. So these were
21 bolted to the aluminium angles, it's a different type of
22 cleat to the top and the bottom. Could you hold one of
23 those just round for the camera so they can see the
24 shape of it. There it is. Turn it round. There it is.
25 So that would have been fabricated as a special, it

24

1 means it's just for this building, and that went on
2 there and there. With those made, the framing is taking
3 shape.

4 Now, in architects' terms and structural engineers'
5 terms, all of the loads have to be taken back into the
6 structure and safely down through the structure into the
7 foundations, so anything that's going to be hung on this
8 building has to be hung securely on to the original
9 structure, and the shelf angles, the three that I have
10 shown you, and the cleats transfer the load and the
11 weight of the cladding back on to the building.

12 The next installation was the cavity barriers, and
13 we will put them in here in the position that they were
14 installed.

15 Now, it is important to note that, on the Studio E
16 drawings, these cavity barriers at the head of the
17 windows were in line with the top of the window, but the
18 Harley drawings showed them at this different position,
19 and when Dominic puts this -- the two of them are there.

20 You can see from the top now, the dotted line, which
21 shows the floor slab, the top of the floor slab forming
22 the compartment over, the cavity barrier at the upper
23 part was slightly above that horizontal dotted line, and
24 the cavity barriers should have been within the floor
25 thickness. As I've said in my report, not a lot turns

25

1 on that, but nevertheless it is a point to note.

2 Could you now point, please, Dominic, to the slots
3 that have been cut out of the lower cavity barrier. You
4 will see here that the fixers cut through the
5 intumescent, understandably, and they cut back into the
6 cavity barriers and created slots ready for the vertical
7 channels to be installed.

8 Now, I haven't got vertical channels for the columns
9 here or going all the way up the building; I'm just
10 going to show it in that area under that window.

11 The assembly involved putting in those vertical
12 channels, but before they did that, they installed the
13 insulation. So could you now put the insulation in
14 place.

15 We don't quite know what sizes of insulation panels
16 were cut; it doesn't really matter for the purposes of
17 this. They would have cut them to suit the work
18 pattern. But the point was they had to maintain
19 a continuity of insulation all of the way across. So
20 here we have the Celotex insulation being installed, and
21 then the next three smaller pieces go under the ...

(Pause)

23 We had a little bit of trouble getting those in
24 before, but they all went in okay today. There we are.

25 If you can imagine that being a similar situation

26

1 above the window and on up through the building and
2 between all the columns all the way round. So there it
3 is.

4 The next thing that was done in the operation that
5 was carried out for the 2012-16 works was to install the
6 vertical channels, so those cleats had to be in the
7 right position. The reason that cleats are set out like
8 this is to get the channels well forward of the building
9 façade so that the insulation could go behind.

10 So could you put the channels on now, please.

(Pause)

12 So there we have it, and I would ask the Inquiry to
13 just simply take that as an indication of what is
14 underneath those ACM panels on the right-hand side.
15 That's the assembly that then receives the panels hooked
16 on.

17 Could you now hold in the direction of the camera --
18 we didn't rehearse this bit, Dominic -- one of those
19 panels edge-on so the Inquiry can see the form at the
20 edge of the cassette that would allow them to be hooked
21 on. There we are. It's good to turn that right the way
22 round. You can see it's got a raking shelf at the top,
23 that's to stop birds landing and staying sitting on it.
24 It's got edges and it's got a base, and at the very
25 base, if you can just hold it there, can you lift it up

27

1 a fraction and then turn it, because the turquoise
2 behind it just shows it -- round the other way, that's
3 it, perfect, and get it level again, turn it to level.
4 Yes, you can just see that there is a shelf at the
5 bottom. In other words, the bottom of the panels forms
6 a tray, which is also quite important.

7 So that was formed out of one sheet of aluminium,
8 ACM, which was cut and folded in that fashion.

9 So please take off now the other three panels there.

(Pause)

11 You can see that has exposed the arrangements that
12 I had just previously described, albeit in this instance
13 now with the front face of the infill panel in position.
14 The left-hand infill panel shows the backing wall, the
15 white on the right. Could you point to the white one,
16 please, Dominic. The white on the right is the
17 aluminium infill panel, and then point to the window
18 further across, there's the complete window which forms
19 the corner window in the lounge.

20 Now, I would like you to take the pointer, Dominic,
21 and run it along the top of the window system there.
22 That area there is one that Dr Lane has pointed out as
23 being so important in relation to closing the edge of
24 the window openings, and ADB2 calls for the edge. So
25 could you run it along the bottom of the window as well,

28

1 please. You can see here that at the bottom of the
2 window and at the top of the window we have no
3 cavity barriers. We know all of this, of course, from
4 the drawings that have been presented in the past, but
5 this is a three-dimensional representation of it.

6 Before we take the corner cladding off, I'm going to
7 get some steps and we have a close-up camera which will
8 enable us to show what's happening on the corner.

9 Before we do that, I have a little tiny model here
10 which has been prepared to explain what is going to be
11 shown by the camera on the corner. May I use this?
12 Right. I'll wait until it comes up -- here we are,
13 I can see it on the screen myself now.

14 This represents the corner condition, or the nose,
15 is a better description, on each of the intermediate
16 columns. This is one of the intermediate columns. The
17 corner columns to the building had two very similar
18 arrangements to this, but this is an intermediate
19 column.

20 What you can see here is the outer line there
21 represents the aluminium cladding panel which is hung by
22 hooks, and here is the other one. So that's one panel,
23 and then all of that is another panel. They were
24 mounted on to this vertical channel, so this is like the
25 channels you saw going up and down the building.

29

1 I've called this a channel, there's the channel,
2 structural channel, that is fixed by a leg coming off
3 the back of it, and then it's not shown by this model,
4 but via brackets, which is that one and that one and
5 that one, they fix back on to the column itself. So if
6 you will allow some artistic licence for that, there is
7 a column down beneath here, but this, I've called these
8 wings to the channel, they go all the way up the
9 building and these would have been very long pieces --
10 I don't know how long, 2 metres, 3 metres, maybe even
11 longer -- they would have gone up the building, bolted
12 to the concrete column via this structure here.

13 This is all very important because -- I'll take this
14 very slowly because it's quite difficult to grasp.
15 These two lines here represent the bottom upturned edge
16 of the cladding cassette panel or the cassette. So if
17 you remember, I showed you, when Dominic turned one of
18 those panels around, that the bottom of the tray, the
19 cassette turned up. So here's the front face of the
20 cassette. It's got a bottom because it bends down
21 underneath, and then it turns up for just 20 millimetres
22 or so, and that is fixed to the wing of the channel
23 that's itself fixed to the building and carries the load
24 down.

25 Along here, backing up to the concrete of the

30

1 building, was the cavity barrier itself, and the space
2 between there and there was the zone into which the
3 intumescent strip is to expand in conditions of fire.
4 So that would have inhibited the passage of fire
5 vertically up the column.

6 The yellow here reveals that part of the column
7 which was not protected by the cavity barriers. The
8 cavity barriers were actually cut back at about that
9 line there, and that line there, but behind the
10 building, so behind this wing. So there's a
11 cavity barrier coming up along here, and here, and here,
12 and back down there, and when there's fire conditions,
13 it can expand out there and it can expand out here, but
14 there is no cavity barrier and no potential for any
15 intumescent strip to expand out into any of the yellow.

16 The outside of the building under the
17 Building Regulations would be defined as the aluminium
18 cassette line, and so, as you can see -- and this is
19 true to scale, this is the exact size -- that is the
20 vertical chimney, for want of a better term, that exists
21 on the nose of the columns, and there are two of those
22 on every corner column and one of those on every
23 intermediate column.

24 Is that clear?

25 MR MILLETT: Yes, thank you very much.

31

1 THE WITNESS: Okay.

2 So could we now go back to model, and I'm go to ask
3 Felipe if he can get into a position well above the
4 model on his steps and hold the camera, the mobile
5 camera that this team have, with it facing downwards,
6 and I will be able to show you through that camera view
7 what I've just described.

8 You may need to get it a little higher than that.
9 I'll wait for it to switch the picture. There we go.

10 Now, Dominic, could you point to, please, and first
11 of all take us through the external line of the
12 cladding. I think it will be visible for everybody to
13 see, but I would like you to show the right-hand piece
14 of cladding. Could you bring it down into the picture
15 again and show where it is hooked on to the channel.
16 There it is.

17 So you can see the edge of that particular cassette.
18 It has a little arm on it, and it hooks over the pin
19 that goes through the channel. It's different to the
20 one on the left-hand side. Could you delineate the
21 left-hand of those cassettes. There it is. Bring the
22 pointer round the nose of it and then back up its return
23 arm. You can see it has a little leg that closes the
24 gap. Is that all clear? Okay.

25 On that picture you can see the turquoise is the

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1 insulation coming up the wall, and the yellow there is
2 the cavity barrier coming in behind the wing. Could you
3 point to the wing, please, Dominic. The cavity barrier
4 is coming in behind the wing.

5 Now I would like to withdraw from that picture and
6 ask Dominic to put the pointer down the right-hand part.
7 Now, if we can go now to the other camera, and show
8 that, you can see that goes all the way down. There we
9 are. So there is the hole going through the building.

10 Could you lift that out now and remove the left-hand
11 of those cassettes and then place that pointer in the
12 channel that forms what I've described as the chimney.

13 So that -- and you can take it right down to the
14 bottom -- there was not a closer to that. That didn't
15 close from the bottom to the top of the building. The
16 Studio E drawings show no closure at the bottom and no
17 closure at the top and no intermediate closure.

18 So before we go on, I would like you now to take off
19 the right-hand part of that cladding, please. I want to
20 just explain that we had a -- I think there were some
21 difficulties in assembling all of this, and I'm going to
22 ask Dominic if he can point to the nosings. There are
23 two nosings on this particular corner column, one there
24 and the next one there, and on the actual nose in each
25 case, there is the channel with the wing that

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1 I described, and you can see the toggles going through
2 it on to which the cladding is hung. Could you show --
3 not on that one, on the other one, that's it -- that's
4 the toggles, that's where the cladding hangs, and the
5 next one, and the next one down, down and down.

6 So there is the channel that goes up the nose.
7 Could we get the mobile camera to go round and get to
8 the right angle to show that there's two channels on
9 that corner. Yes, could you bring the camera round to
10 show that. There we are. Perfect, thank you.

11 What actually happened was that they found, I think,
12 difficulties in assembling this arrangement on the
13 corners, so these cleats, the silver bit that you can
14 see right in the middle -- I don't need that to be
15 pointed, there it is -- those cleats were bolted to the
16 vertical channel on the nose, which in turn was bolted
17 back to the column, and these new channels were added in
18 order to hang the cladding panel on it, because they
19 found they couldn't get the cladding panels to wrap
20 round the edge. I won't go into that in too much detail
21 because it's not particularly important. What is
22 important is it just demonstrates the difficulty of
23 bringing the cavity barrier around the front face of --
24 behind the channel to the right and in front of the one
25 to the left, it's very, very difficult. So there we

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1 are.

2 Now, could we now take a torch at the bottom and
3 could Felipe get to the very top of the stepladder again
4 and look down the gap, and could you rehang the cladding
5 panel, Dominic. We want a torch to shine straight up
6 through it. I have one here if you want one or if
7 anybody else has a switched off mobile phone that we can
8 lie beneath it. Has anybody got one or shall I turn
9 this one on? Mine is switched off, so it will take
10 a few seconds to fire up. Could we switch the torch on?

(Pause)

12 Here we have a torch coming. Dominic has gloves on,
13 so he can take that torch from you. Dominic, could you
14 take the torch with your gloves? Oh, you have got one,
15 okay.

16 You can look down here and we should be able to see
17 the light from the bottom coming all the way up. There
18 we are.

19 So there is the gap that runs all the way up the
20 building, and there's three of those. If I can ask the
21 camera to switch back to me now, I will show again one
22 last time.

23 So, true to scale -- the model is one-fifth scale,
24 but true to scale, we have -- the torch was shining up
25 one of these. So 1, 2, 3, 4, 5. It's a zig-zaggy maze,

35

1 almost.

2 Could we go back to the model now, please. I'm
3 going to ask you to -- we won't be taking cladding on
4 and off too often, but we need to for this bit -- take
5 the vertical cladding panel off adjoining the window
6 now. That's the only one you need to remove. Thank you
7 very much.

8 I'm now going to ask Dominic to go to the back of
9 the model. So at this point we're going to remove the
10 screens so that we can actually see the model from the
11 other side with the mobile camera and with a camera
12 that's up there.

13 I think, if it's acceptable to the Inquiry, we will
14 put the screens on the front of the model, because it
15 will help the view from the other side.

16 Could we switch the other camera on that gives us
17 a view of the back of it.

(Pause)

19 Could you move the other screen as well. Okay.

20 So here we are now looking at it, and to orientate
21 you now, column A5 is now on the left of the picture,
22 because we're on the other side, we're looking at it
23 from inside the flat. So here's column A5 on the left.
24 Could you point to that, please, Dominic.

25 No, that's B5, A5 is the other one, the column right

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1 on the corner. That's it. So there's column A5, B5 is
2 the one you were pointing to first, and could you point
3 to the concrete floor above the flat. You can see
4 that's there, and the concrete floor of the flat, there
5 we are.

6 Then if you come across to what will be your left,
7 you can see the original window now sat on its original
8 window cill on the concrete spandrel. You can just see
9 the chamfer in front of it. So you see it's set well
10 back.

11 I now want you, please, to show where the sliding
12 partition between the kitchen and the living room was.
13 There we are. On the right is the kitchen. Could you
14 put the fridge into position. Up against the wall on
15 the right. That's it, right back against that
16 compartment wall. Turn it round. That's correct.
17 That's perfect, thank you.

18 So there is the fridge in the position that we
19 believed it was in from photographs at the time of the
20 fire. Under the windows, you can see the white under
21 the three windows there, that was insulation, very thin
22 insulation that was on the inside of the solid concrete
23 walls, and there's similar to that on the soffit
24 ceiling.

25 If you could point to it, it's the very left-hand

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1 window, the window on the side of the building, the
2 white bit at the top. That was the insulation that
3 protected against cold penetration deep into the
4 structure.

5 Could you now take out the three window linings.
6 The window linings that we're removing now are the ones
7 that represent the 2012-16 overcladding works. They're
8 the plastic window linings.

9 We can now see -- I think a camera will go in close
10 up again for us, and you can see some wooden strips
11 around the sides and the cills of the windows. Perhaps
12 you could point to them, Dominic, and then the camera
13 will pick them up. Those wooden strips were the ones
14 that held the original window cills in place and the
15 original linings to the side and the head of the window.
16 They were left in place in most cases, as far as we can
17 see, and the new plastic window linings were fixed on to
18 them and packed on to a combination of Kingspan and
19 Celotex products around the cill, head and jambs.

20 Could you now take out the left-hand strip of
21 packing. There is a piece of packing that's been made
22 by the model-maker to be removed. These were just put
23 around the windows. I will now ask one of you to stay
24 in the back side of the model, perhaps Felipe, and the
25 other, Dominic, to go round to the front, and perhaps we

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1 could switch up to the overhead camera again so that we
2 can see what Dominic is doing. Felipe's camera will
3 come on in a moment.

4 When the overhead camera's got Dominic, I will ask
5 him to remove the piece of insulation. It's got you
6 now, Dominic, so could you take out the piece of
7 insulation on the column. We have made that section
8 removable, you can see the old column underneath it, and
9 I would now like to view from inside -- there we are.
10 You can now see the gap that existed between the
11 concrete column and the window frame. Bearing in mind
12 the window frame was installed -- the new window frames,
13 I should say -- the new window frames were installed
14 further forward, further out from the building than the
15 old ones, and they were therefore forward of the part of
16 the column that the wood strip is fixed to, and there is
17 a gap up the jamb that is as wide in some cases as
18 120 millimetres, as measured by Dr Lane, but also
19 measured by us. That's from top to bottom.

20 So there is a gap from top of bottom of all the
21 windows varying in its size out to 120 -- well, the
22 worst we found was 120.

23 So a fire inside the apartment has a route between
24 the column and the window frame, as well as out through
25 the window.

39

1 Could you now show that from outside. I think we
2 can safely put the panels back now to assist the
3 viewing. The screens, I should say.

4 How are we doing for time, is this okay?

5 While that's going on, I'll just ask you,
6 Mr Millett, in terms of convenience for the Inquiry,
7 with this part that's coming up finished, I will have
8 a natural break at that point because we will have
9 finished with the right-hand side of the model and we
10 will be going to the indicative scheme. Is that a point
11 at which you would wish me to stop or carry on?

12 MR MILLETT: I think you can probably stop at this point.

13 I have a question for you, and if we can have the
14 camera back on the front side of the model, I can ask
15 the question so that those listening to it can
16 understand it.

17 You can see the cavity barrier at the head of the --
18 well, not at the head of the window, but running
19 horizontally along the --

20 THE WITNESS: Yes.

21 MR MILLETT: -- compartment floor of the flat above. Did
22 the cavity barrier above those windows in that position
23 run the full length of the floor line, or were the
24 cavity barriers only the length of the top of the
25 window? Just for clarity's sake.

40

1 THE WITNESS: They went the whole way across the spandrel,
 2 so straight between the columns, and they went around
 3 the columns as well.
 4 MR MILLETT: Yes, thank you.
 5 THE WITNESS: But the problem being that they went round the
 6 concrete columns and around the back of the channels,
 7 but not around the front of the channels. That's the
 8 problem.
 9 MR MILLETT: Exactly, thank you.
 10 THE WITNESS: Could we now then ask Dominic to -- first of
 11 all, could we ask Felipe with the camera to get an angle
 12 looking from the front through the gap at the right-hand
 13 side of the window. So if you can get that -- there we
 14 are. Could you shine your camera through that gap.
 15 I don't feel I need to ask Dominic to go round the
 16 back with the pointer and show that gap. I think
 17 the Inquiry has got it. I believe that's correct. It's
 18 clear enough. Okay.
 19 MR MILLETT: Yes, thank you.
 20 THE WITNESS: So we can leave that.
 21 Unless there are any other questions on that, we can
 22 now move across to the indicative scheme.
 23 While I'm talking, Dominic, could you please take
 24 down the assembly in the middle in its entirety.
 25 While he is doing that, Mr Millett, I'll explain, if

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1 I may, that I developed what we have called
 2 an indicative approach -- I occasionally slip language
 3 and call it an indicative scheme, but it's an indicative
 4 approach -- and the reason this was done -- you'll no
 5 doubt ask me questions on this later -- is that I felt
 6 it would be useful for the Inquiry to see what a piece
 7 of work that was as close as possible to the design as
 8 developed by Studio E would look like in terms of
 9 dimension, size and assembly, in a form that was
 10 compliant with ADB2, which is the route we believe that
 11 Studio E went.
 12 Now, I'm certainly not offering this as a finished
 13 design; it's not, there would be a lot of work to do
 14 with it. But I am saying that a dialogue would take
 15 place between an architect's office and specialist fire
 16 consultants, possibly subcontractors, in order to
 17 develop a scheme in sufficiently robust form to go and
 18 have early conversations with the building inspector,
 19 and thereafter the design would be further developed to
 20 a point where it was believed that, in principle, the
 21 key issues and agendas and problems had been understood
 22 and it would form something sufficiently robust to go
 23 out to tender, with the important point being you don't
 24 want to go out to tender with something which is then
 25 going to prove unbuildable because it can't be made to

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1 comply with legislation, et cetera.

2 The indicative scheme is an arrangement which I've
 3 done with the help of colleagues in my office when I was
 4 there that takes the principles of the original design,
 5 so that is a rainscreen arrangement -- it could have
 6 been done other ways, but no, we followed the rainscreen
 7 arrangement -- insulation on to the outside of the
 8 building -- could have been put on to the inside, far
 9 better on the outside, I can talk to that another time.
 10 So insulation on the outside, rainscreen system, and
 11 then, most importantly, a U-value as good as could be
 12 achieved. This is the amount of insulation that the
 13 building will have, and this is what's going to keep the
 14 building comfortable, keep the heating bills down. The
 15 building needs less cooling in summer, less heating in
 16 winter.

17 Best place for the insulation is on the outside, so
 18 we went for insulation on the outside, same as Studio E,
 19 all that was right, and we aimed for the 0.15 U-value.
 20 It's been described as an aspirational U-value. It's
 21 a very good U-value, and laudable really, to their great
 22 credit, the design team, Fordhams and the architects,
 23 pursued a 0.15 value in the belief that they would be
 24 future-proofing the building for a long time to come,
 25 because it is anticipated that legislation will require

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1 ever better U-values, so they took it to what was
 2 considered to be an optimum: 0.15.

3 So I've taken all that and fed it into this scheme,
 4 and I'm going to ask Dominic now to -- while he is doing
 5 it, please bear in mind the yellow strips on the column,
 6 top and bottom, and the little one in the middle,
 7 they'll come up in the conversation in a moment.

8 Could you put the carcass of the indicative scheme
 9 on to the model, please, Dominic. That's why those
 10 brass pins are there, they hold these parts that go on.

11 (Pause)

12 There we go. Right, that's safely there? Yes.
 13 Okay.

14 So you will see a preponderance of yellow here as
 15 opposed to turquoise, and that's because all of the
 16 yellow is mineral wool. So we have no polyisocyanurate
 17 here at all, it's all mineral wool. So we've got
 18 mineral wool, cavity barriers, which are mainly
 19 behind -- horizontally behind the black strips, and
 20 vertically that you can see one -- could you point to
 21 the vertical cavity barrier, Dominic. There it is.

22 The mineral wool insulation, you'll no doubt ask me
 23 questions about the calculations of that, but that had
 24 to be thicker than the PIR, because it's a less
 25 efficient material. So the mineral wool on the spandrel

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1 panels was set at a greater thickness than the
 2 polyisocyanurate, turquoise, and around the columns it
 3 was also thicker. That meant that we had to have bigger
 4 cleats -- could you point to the cleats. Yes, the
 5 cleats had to be bigger, and the vertical channels had
 6 to be further out from the building. We then installed
 7 the horizontal cavity barriers where they should be.
 8 I'm now going to ask for the camera to come in at
 9 an oblique angle on to that indicative scheme. There we
 10 are, thank you. That's great.
 11 MR MILLETT: May I interrupt you with a question.
 12 THE WITNESS: Yes.
 13 MR MILLETT: When you say that the cleats had to be bigger,
 14 do you mean they had to be deeper to accommodate the
 15 greater volume of mineral wool?
 16 THE WITNESS: Yes, sorry, my poor use of language. They had
 17 to be deeper to support the rails further out. If you
 18 remember, earlier on I said the entire weight of this
 19 structure, weight of the cladding, has to be taken back
 20 through the rails, through the ribbon rails, through the
 21 cleats, through the brackets, into the building, so they
 22 had to go out further. You're quite right, I'm very
 23 sorry, bad use of language.
 24 Could you now show, please, the horizontal
 25 cavity barrier over the window -- there we go -- with

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1 its intumescent strip. Could you point to the part of
 2 that returns on to the building. There it is, going
 3 right back into the building. Then the yellow
 4 insulation above it is cut to fit afterwards.
 5 Could you point to the bracket, the continuous shelf
 6 bracket that supports all of that arrangement. There it
 7 is. So there is the shelf bracket. Then we get a cut
 8 right through the window, top and bottom. Then could we
 9 go down to the horizontal cavity barrier under the
 10 window.
 11 Now, that one I would try and get higher if I could,
 12 and this is all for discussion with the manufacturers
 13 and with the Building Regulations officer, but I would
 14 try and get that cavity barrier a bit higher, but you
 15 can see a sort of trapezoid-shaped piece above it.
 16 That's all mineral wool, limited combustibility, packing
 17 any gap that is above the cavity barrier, if one exists.
 18 Could you go to the mineral wool that's behind the
 19 angle cleat that's supporting that. That looks like
 20 it's serrated at the edge there, but that would just be
 21 following the line of the chamfer, and that's mineral
 22 wool that would be packed in behind and beneath the
 23 window cill, once installed.
 24 MR MILLETT: Mr Hyett, I'm so sorry to interrupt you again.
 25 You said "mineral wool, limited combustibility". Is

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1 that correct, or should mineral wool be non-combustible?
 2 THE WITNESS: Non-combustible, I beg your pardon. Yes,
 3 you're correct, I'm wrong, yes. Thank you.
 4 Then we've got the angle there, and you can see the
 5 mineral wool below the cavity barriers between the two
 6 cavity barriers that run along spandrel.
 7 I'm now going to ask that we go out to the nose of
 8 that column.
 9 MR MILLETT: I'm so sorry to interrupt you again, I really
 10 don't want to interrupt your flow, but this anticipates
 11 some questions I think we may come to later in your
 12 examination.
 13 Looking at the cavity barrier at the head of the
 14 window there in your indicative scheme --
 15 THE WITNESS: Yes.
 16 MR MILLETT: -- could you just point out for us exactly
 17 where the cavity barrier meets the shelf angle, and the
 18 potential for a gap between the metal shelf angle there
 19 and the concrete, and also to point out for us how the
 20 cavity barrier there sits in relation to the blue line,
 21 the compartment floor above it. Is there an overlap
 22 between the two which is exact, or is there an area
 23 where there is no overlap?
 24 THE WITNESS: I think the model will do this well enough for
 25 us. We might have to turn later to drawings to show

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1 this, but I think the model will do well enough.
 2 The way it's been shown on the drawing in section 3
 3 of my report is that that cavity barrier, the soffit of
 4 it or the lower edge of it is slightly below the
 5 concrete ceiling line, and it sits on the top of the
 6 angle, the aluminium angle. The aluminium angle would
 7 fit tightly to the concrete, so I don't think there is
 8 much potential for passage of fire up between the angle
 9 and the concrete, but the angle, of course, has
 10 a relatively low melting point and therefore itself
 11 cannot be taken as a cavity barrier.
 12 So there would be a discussion about that with the
 13 building inspectorate as the design developed, and
 14 of course with the fire consultant.
 15 It may be that an arrangement that was satisfactory
 16 could not be found, in which case that shelf angle would
 17 have to be reviewed and possibly take the form of
 18 something that ran into the underside of the concrete
 19 ceiling. There could be a revised arrangement, but
 20 that's the simplest. I think it would be possible to
 21 get agreement on that, but we'd have to look.
 22 Also, if it was considered that the cavity barrier
 23 was in itself too low there because it's below the
 24 compartment line, the obvious answer there is to put two
 25 cavity barriers one above the other in that position and

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1 then move away with the insulation.
 2 MR MILLETT: Yes, I see, thank you.
 3 THE WITNESS: Okay?
 4 Can we now go to the nose of that, and I think we'll
 5 get a better camera angle on that one. There we are,
 6 that's perfect.
 7 Actually, I'm going to ask you to drop the pointer
 8 for a moment and move across and shift the other piece
 9 of cladding off so that we can get them both in the
 10 camera view at the same time.
 11 (Pause)
 12 Could you take the cladding off the column A5.
 13 Thank you. That's perfect.
 14 So on A5 you will see that there are two vertical
 15 channels, the one wing channel and the other wing
 16 channel, we talked about those earlier, because that has
 17 two noses, that column being a corner column. On this
 18 one you will see there are two vertical channels but
 19 they are not on the nose, they're to either side of the
 20 nose. And you can see the horizontal cavity barrier.
 21 Could you point to it, please, Dominic. That runs
 22 behind the channels, they're not winged in this case,
 23 they're just normal channels, behind the channels and
 24 along and connects with the cavity barrier on the
 25 spandrel line.

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1 Is that clear, Mr Millett?
 2 MR MILLETT: Yes.
 3 THE WITNESS: We've got that.
 4 And the same with the one below, Dominic, if you
 5 would, please.
 6 So, with this arrangement, it's possible to continue
 7 the horizontal channel cavity barrier across the window
 8 head, across the upper window head and the two heads you
 9 can see, to take those straight across and then straight
 10 around the column.
 11 The intermediate one -- could you point to that one,
 12 Dominic -- that doesn't need to go round the column
 13 because that is merely -- I was going to say sealing,
 14 but it's placed at the base of the window to inhibit the
 15 passage of fire into the spandrel cavity, and that
 16 connects with the vertical cavity barrier which runs up
 17 the side of the window.
 18 Dominic just pointed to that cavity barrier, that is
 19 a cavity barrier which is on the compartment line, which
 20 is going all the way through the building, but between
 21 that and the window there is more cavity barrier
 22 actually forming the seal to the edge of the window.
 23 Okay. Now, with that done, we can put the cladding
 24 back on to that end. In fact, we should clad both sides
 25 of the building now and leave the middle portion free.

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1 I'm sorry, this will take a few moments now whilst
 2 this is put back together.
 3 (Pause)
 4 I would normally help, but we are keeping 2-metre
 5 distance, so I'm afraid it will take a little longer.
 6 (Pause)
 7 So as this is taking place, Mr Millett, I can just
 8 point out -- no, I'll wait, actually, until Dominic has
 9 the pointer and then I can show accurately what I'm
 10 going to say.
 11 (Pause)
 12 I would add at this point that the model, of course,
 13 doesn't tell us anything new, all this has been dealt
 14 with in evidence along the way, but it does help,
 15 I think, to have a three-dimensional view of the
 16 building as opposed to constantly relying on drawings.
 17 That's the value of it.
 18 (Pause)
 19 Right. So perhaps you would put the centre carcass
 20 in now. We haven't seen this on the building yet. This
 21 is a continuation of the 2012-16 overcladding coming
 22 into place. You can see now the three windows, two
 23 living room windows and the one kitchen window and the
 24 two infill panels which are white.
 25 If you could clad that for me, please.

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1 (Pause)
 2 These panels are all numbered and they will actually
 3 only fit properly into certain positions, so ...
 4 (Pause)
 5 I do apologise for the delay.
 6 MR MILLETT: Not at all.
 7 (Pause)
 8 THE WITNESS: Now, across the spandrel there was five
 9 panels. Could you space them evenly so the joints look
 10 about right. That's right. So there were five across,
 11 but the very left-hand one we have cut into two, because
 12 that's where the indicative scheme and the work as
 13 constructed meet.
 14 I'll ask Dominic now to please put on the last two.
 15 There we go. So that's the panel cut in half, for want
 16 of a better description. There it is. Then when
 17 Dominic puts the last two panels in, which is the end of
 18 this presentation, I'll ask for the camera to come at it
 19 from an oblique angle and you will see what I mean when
 20 I say that the cladding had to move out to accommodate
 21 the thicker insulation.
 22 Could you give us the camera angle obliquely,
 23 please. Lovely. Could you now put those two panels in,
 24 Dominic.
 25 (Pause)

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1 Thank you.
 2 So you can see that the indicative approach achieves
 3 an aesthetic very similar, but it would have been
 4 a thicker wall.
 5 If we could now take the camera back out to
 6 a square-on view of it, my very last comment is: please
 7 would you point to the vertical nose on the work
 8 as-built, Dominic, where you get the vertical joint
 9 here, and on the one that is the indicative scheme, that
 10 nose piece is a single piece fixing on the corner, which
 11 receives the cavity barrier deep into the back of it.
 12 That, Mr Millett, concludes the presentation.
 13 MR MILLETT: Mr Hyett, I congratulate you on a very clear
 14 and helpful presentation. We're all very grateful to
 15 you for that. There may very well be questions about
 16 the presentation in due course, but I think, for the
 17 moment, it's probably time to take a short break,
 18 Mr Chairman.
 19 SIR MARTIN MOORE-BICK: Yes, it was an excellent
 20 presentation, thank you very much, and thank Dominic and
 21 Felipe for their part in it.
 22 Yes. Shall we have a short break at this point?
 23 Let's say we will come back at 3.40 and take it from
 24 there.
 25 MR MILLETT: Very good, Mr Chairman, thank you.

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1 SIR MARTIN MOORE-BICK: 3.40, then, please.
 2 (3.25 pm)
 3 (A short break)
 4 (3.40 pm)
 5 SIR MARTIN MOORE-BICK: Right, Mr Hyett, all ready to carry
 6 on?
 7 THE WITNESS: Thank you, yes, I'm good.
 8 SIR MARTIN MOORE-BICK: Thank you.
 9 Yes, Mr Millett.
 10 Questions from COUNSEL TO THE INQUIRY (continued)
 11 MR MILLETT: Mr Chairman, thank you very much.
 12 Mr Hyett, I'm going to start my substantive
 13 questions to you by asking you about some of your
 14 experience, and in particular your experience of
 15 overcladding residential buildings and your knowledge of
 16 materials used in the construction of the external
 17 façade at Grenfell Tower itself.
 18 Now, your CV doesn't indicate particular experience
 19 of overcladding buildings in excess of 18 metres in
 20 height, so can I ask you: what experience of designing
 21 or supervising such work do you have?
 22 A. In overcladding buildings, I have not been involved in
 23 an overcladding scheme. I have been involved in quite
 24 extensive, in terms of scale and size, and complex
 25 refurbishment works for municipalities, two of them in

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1 London.
 2 In terms of high-rise, my firm has been involved,
 3 and I was the partner who brought the work in and then
 4 stayed with it through to completion, visiting the
 5 partner firm with the executive architects and seeing
 6 the buildings built on a good number of occasions, some
 7 12 or 15 high-rise, by which I'm talking about 35-storey
 8 tall buildings, residential, which I think had about
 9 900, 1,000 apartments in them.
 10 So I have been involved in issues of escape and
 11 issues of planning and issues of construction at
 12 high-rise, but not overcladding of this kind.
 13 Q. Right.
 14 Was HKS involved in aluminium and bronze cladding
 15 when working as part of a design consortium on the
 16 Optus Stadium in Australia?
 17 A. Ah, yes, I was the partner who lived in Perth and saw
 18 that project through.
 19 Q. Can you tell us a little bit more about the aluminium
 20 and bronze cladding aspect of it?
 21 A. Yes. That was a plank system. The main contractor had
 22 design -- well, it was effectively a design and build
 23 project. The main contractor had detailed design
 24 responsibility for that. The cladding subcontractors
 25 developed that work. Those panels were manufactured

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1 actually in China and brought to Australia from China.
 2 We were part of a consortium of three architects. We
 3 had a single office in Perth. I was based in that
 4 office, probably 35, 40 people were based there, and we
 5 did not individually specialise in any part of the
 6 building, the teams were completely intermixed and
 7 intermeshed, but I did see that cladding work being
 8 developed, I saw the principal drawings developed with
 9 the structural engineers, the packages prepared, and
 10 then issued out via the main contractor to the
 11 subcontractors for tendering.
 12 Q. Did that project involve, to some extent, residential
 13 accommodation?
 14 A. There was no residential accommodation, that was
 15 entirely a stadium.
 16 Q. Were you involved in the design of the cladding at all?
 17 A. I was involved in what we call stage C concept and into
 18 stage D design; many, many design workshops on the
 19 design development of the building; the walls to that
 20 building in the end canted out or lent slightly
 21 outwards, so there was immense discussion about whether
 22 they should be vertical or lean out; the configuration
 23 of the cladding; the sizing of the panels -- all of that
 24 went into the general design development mix, which took
 25 us through to a point at which we'd got information

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1 ready for packaging and tendering. So I was involved,
 2 yes.
 3 Q. Did you adopt a particular methodology to comply with
 4 Australian legislation and industry guidance applicable
 5 there?
 6 A. Yes, well, the first important aspect of that was to
 7 establish the codes that we would have to comply with,
 8 and so there was substantial work done in understanding
 9 the codes. We had structural engineers who were
 10 extremely -- I was going to say valuable to the process,
 11 but of course they were. It was an integrated
 12 architectural and engineering approach to the façade
 13 development. Yes, code compliance was important from
 14 the beginning.
 15 Q. Was the methodology on that project in any way similar
 16 to the indicative approach which you have explained to
 17 us in relation to the exterior façade at Grenfell Tower?
 18 A. I've not thought about that before, but I don't think it
 19 was, because the Optus Stadium, apart from being
 20 a stadium, a very different kind of building, was
 21 a new-build, and with the Grenfell overcladding and all
 22 the other work on Grenfell, we've got works on
 23 an existing building. So it's quite a different
 24 process, actually.
 25 Q. Right.

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1 Was the indicative approach that you have identified
 2 here adopted in any other projects that you have worked
 3 on?
 4 A. I think it was probably an accumulation of experience
 5 across all the projects, but probably with an emphasis
 6 on refurbishment work, which I've done quite a lot,
 7 actually, in my career, and I think it's an amalgam of
 8 all of those things --
 9 Q. I see.
 10 A. -- that informed my approach to this.
 11 Q. So it's based on wide experience rather than specific
 12 projects?
 13 A. Yes. If you'll excuse the term, I think I sat down at
 14 the beginning and rolled my sleeves up and thought:
 15 well, how would I set about this one? I'm a trained
 16 architect, this is relatively new and I set about it on
 17 the basis that it was another project that had come in.
 18 Q. Were you involved in projects relating either to the
 19 Royal Stoke University Hospital or the Salford Royal
 20 Hospital or Hope Hospital?
 21 A. They're both projects that have been done out of the
 22 London office of HKS. I have not personally had any
 23 involvement at any stage with either of them.
 24 Q. What proportion of your career over the past ten years
 25 has been in private practice and what proportion would

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1 you say was involved in education or academia?
 2 A. 98% private practice.
 3 Q. Have you been involved in a project in the last
 4 ten years which was procured by way of or as a design
 5 and build project?
 6 A. Yes. I'm sorry, that 98% sounds terribly precise;
 7 I mean the bulk of it. I'm a practising architect.
 8 Q. Yes.
 9 So you have been involved in a project at least in
 10 the last ten years which was procured as a design and
 11 build?
 12 A. Yes.
 13 Q. How many, do you think?
 14 A. Well, the projects that I've been involved in, in my
 15 recent career -- well, all my career, actually, but the
 16 recent one in particular -- have been very large
 17 projects. So the Optus Stadium was something like five,
 18 six years from beginning to end, and I was involved all
 19 the way through. But I was involved in a project in
 20 Copenhagen, which again was design and build, and most
 21 of my work has been design and build, seeing projects
 22 that we had won through delivery to completion, and bids
 23 for projects, which could be in the form of design
 24 competitions and other forms of selection process. So
 25 those have been the two types.

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1 Q. Right.
 2 A. But I have been involved in design and build work right
 3 through my career, starting in the 1980s.
 4 Q. Have you been involved in a project which required the
 5 application of Approved Document B, very specifically
 6 section 9, "Concealed spaces (cavities)", or ADB
 7 section 12, "Construction of external walls"?
 8 A. I have not personally dealt with those issues. The more
 9 recent decade and a half of my career, I have not been
 10 at the pit face in that sense. I have been in projects
 11 where that work has been dealt with by our teams.
 12 Q. Have you been involved in any projects incorporating
 13 a cladding system where a full-scale test pursuant to
 14 BS 8414 has been undertaken, either part 1 or part 2 of
 15 BS 8414?
 16 A. I have not been involved in one, no.
 17 Q. No.
 18 Now, can we please have paragraph 2.3.16 of your
 19 report, first of all, which is {PHYS0000002/50}.
 20 In fact, what I want to show you, perhaps, is not so
 21 much that paragraph but paragraph 2.5.2 where you repeat
 22 the point and you say:
 23 "At paragraph 2.3.16 of my report I stated that
 24 I would apply the standard that I would 'expect of a
 25 reasonably competent architect's practice' (as opposed

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1 to a reasonably competent (individual) architect)."
 2 Now, I just want to ask you about that.
 3 Do you agree, first of all, that in respect of
 4 organisational matters, such as the system of
 5 record-keeping, assembling an adequate team and so on,
 6 the appropriate standard would be the standard of
 7 a reasonably competent architectural practice?
 8 A. Yes.
 9 Q. And that's because it's an organisation rather than
 10 an individual that maintains those systems and
 11 performs --
 12 A. Correct.
 13 Q. -- those roles; is that right?
 14 A. Correct.
 15 Q. In respect of work done by individual architects, such
 16 as drafting specifications or producing drawings, the
 17 work must be judged by reference -- is this right? -- to
 18 the standard of the reasonably competent architect?
 19 A. I'm not quite sure how to answer that.
 20 Many architects -- I think it's 60% or more of the
 21 profession -- work in small practices, five people or
 22 less, and they will be almost like general practitioners
 23 in medicine, they will deal with all aspects of work,
 24 usually. In the larger offices, architects might
 25 specialise in a particular area, project management or

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1 a particular kind of work, sports architecture or
 2 healthcare work. So it's a little difficult to set the
 3 standard.
 4 But I think when one's doing a larger job, one is
 5 looking for the competency that one would expect across
 6 an office, because once you get into larger jobs and
 7 more complex jobs, you talked about a stadium, major
 8 residential schemes, a complex project, you will
 9 immediately start to rely on a number of different kinds
 10 of specialism coming together.
 11 Q. Do we take it that you are not applying a single
 12 standard of competence across the board --
 13 a one-size-fits-all approach, as it were -- but rather
 14 depending on the activity you are seeking to assess?
 15 A. That's correct, yes.
 16 Q. Is your view that there is a consistent objective
 17 standard of the reasonably competent architect
 18 exercising due skill and care?
 19 A. Yes.
 20 Q. So can we take it that, from you at least as an expert,
 21 your approach is that you don't apply a lower standard
 22 of competence simply because the individual or the
 23 practice has less experience or lower qualifications?
 24 A. No. That is correct.
 25 Q. Just a couple of general points.

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1 Are you a member of the RICS?
 2 A. No.
 3 Q. Have you ever performed the role of an RICS employer's
 4 agent?
 5 A. No.
 6 Q. I take it, then, you haven't ever performed the role of
 7 an RICS quantity surveyor either?
 8 A. No.
 9 Q. Can I just ask you then about architects training in
 10 general.
 11 Now, you were the RIBA council member responsible
 12 for architectural education for some four years, as you
 13 have told us. Did that give you the responsibility for
 14 validating schools of architecture to award RIBA
 15 qualifications?
 16 A. I was involved in validation. The RIBA is organised by
 17 having heads of department, so there was an education
 18 director while I was there, and the education director
 19 has an executive team, in this case, under her, and they
 20 deal with the day-to-day work. The vice president is
 21 a member of council appointed to oversee that particular
 22 function within the RIBA. I was the vice president
 23 responsible for education. So I worked closely with the
 24 executive.
 25 Q. I see, yes.

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1 When we talk about RIBA qualifications, are those
 2 qualifications set by the ARB?
 3 A. No.
 4 Q. They're not?
 5 A. No, the RIBA qualification is essentially an examination
 6 created by the RIBA, owned by the RIBA, and maintained
 7 by the RIBA. The registration board -- ARCA before ARB
 8 and now ARB -- join the RIBA in validating schools.
 9 Q. Right. So just to be clear, the ARB doesn't have any
 10 role -- or does it? -- in setting or prescribing
 11 qualifications and the content of exams?
 12 A. The RIBA exam is split into three parts: part 1 after
 13 three years, part 2 after a further three years and
 14 part 3. That entire spectrum is about seven years.
 15 The exam is an exam that used to be taken in the
 16 RIBA's premises at Portland Place, and students --
 17 candidates would come and they would sit and design in
 18 the RIBA.
 19 Schools of architecture were ultimately allowed to
 20 run courses and to give the RIBA title part 1, 2 and 3
 21 alongside their own degrees. So the RIBA exam is
 22 essentially an exam that, part 1, for example, or
 23 part 2, is awarded with a degree by a university.
 24 A university would say, "You have a degree and you have
 25 RIBA part 1". So the university degree is deemed to be

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1 equivalent in standard to the RIBA's own course.
 2 Q. Is it right that, to practice as an architect in the
 3 United Kingdom, an individual has to satisfy the ARB
 4 criteria?
 5 A. To practice in the United Kingdom as an architect --
 6 because we have protection of title, not function -- one
 7 must have passed the RIBA part 1, part 2 and part 3
 8 exams, or have entered via an exemption, which is
 9 another story I don't think we need to go into here. So
 10 RIBA part 1, 2 and 3, RIBA exam. If that exam is
 11 passed, the ARB accept that student for registration.
 12 Q. Right. But is it right that you don't have to be
 13 a member of the RIBA in order to practice as
 14 an architect?
 15 A. That is correct. The only requirement for using title
 16 in the United Kingdom is that you are registered with
 17 the Architects Registration Board.
 18 Q. The ARB?
 19 A. The ARB.
 20 Q. Okay.
 21 Is it fair to say that the RIBA's codes of practice
 22 are more detailed and more rigorous, perhaps, in terms
 23 of competences than the ARB, or are they the same, do
 24 you think?
 25 A. Well, the code of practice -- both organisations -- the

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1 ARB is a registration body, it is not a membership body.
 2 The RIBA is a membership body, so it has cultural and
 3 educational programmes and a host of other services to
 4 support an architect. The registration board merely
 5 keeps the register and deals with issues of discipline.
 6 But they both have codes of conduct, which I think may
 7 have been what you were referring to, and both of those
 8 codes are fairly short and they are very similar to each
 9 other.
 10 Q. Right.
 11 I think it's right that only the RIBA imposes a set
 12 number of CPD hours and core curriculum; the ARB doesn't
 13 do that.
 14 A. That I'm afraid I don't know.
 15 Q. Right.
 16 A. But the RIBA has certainly run CPD programmes. My
 17 entire career I remember them, yes.
 18 Q. Forgive the question, and it may be a little bit vague,
 19 but do you think that an architect who is subject to the
 20 RIBA rules is subject to greater regulation than
 21 an architect who is not?
 22 A. I think, by definition, it has to be, because there's
 23 another set of rules, yes, so definitely. Are they tied
 24 to a higher standard? If you would wish me to answer
 25 that as a follow-on question --

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1 Q. Yes, please do.
 2 A. I think the RIBA's work is more in helping than ruling.
 3 The RIBA not only has produced a very detailed and good
 4 curriculum -- which, by the way, is dynamic, it's
 5 changing over the decades to deal with new agendas,
 6 ecologically responsible design, et cetera -- but they
 7 also have extremely helpful and valuable methods of
 8 practice described in, for example, the RIBA Job Book.
 9 Very detailed manual to assist an architect in his or
 10 her day-to-day work.
 11 So the RIBA produce much more -- and rightly so,
 12 because the registration board, it's not their job --
 13 the RIBA produce very useful documentation which
 14 provides a template, a framework, within which to
 15 practice.
 16 Q. Just focusing a little bit more on the ARB, if we can,
 17 is it right that the training which is required by the
 18 ARB falls into three parts: parts 1 and 2, which are
 19 general criteria and graduate attributes, and then
 20 part 3 is the professional practice examination?
 21 A. Yes, I think I must have failed to explain this clearly
 22 enough, so perhaps I could step back.
 23 Part 1, part 2 and part 3 are the RIBA exams.
 24 Q. Yes.
 25 A. So the ARB require part 1 to be completed before part 2

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1 is embarked upon, et cetera, but it is the RIBA exams.
 2 But the ARB do require parts 1, 2 and 3 of the RIBA exam
 3 to be passed before they will accept graduates for
 4 registration.
 5 Q. Is it right that the performance criteria are expressed
 6 by the ARB in very broad terms, and it's then for the
 7 individual architectural schools to draw up their own
 8 curricula?
 9 A. No. There may be people who will disagree with me on
 10 this, but having been dealing with this at a very close
 11 level during a part of my career where I was heavily
 12 involved in the RIBA, it is the RIBA who set the course
 13 because it is the RIBA exam. The ARB, for want of
 14 a better term, they endorse it.
 15 Q. Right.
 16 A. They have stated their acceptance of it. They don't
 17 compete with it, they endorse it. They do provide ARB
 18 nominated panelists to attend validation visits to
 19 schools, but it is the RIBA exam.
 20 Q. Now, I think you have said that training in respect of
 21 the Building Regulations would normally fall within
 22 part 3 of the RIBA exams; is that right? The
 23 professional practice exam.
 24 A. The best way I can describe this, I think, is to say
 25 that there is an intensification of formalised training

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1 around construction legislation at part 3 stage.
 2 However, from the very first term in a school of
 3 architecture, students will be developing designs
 4 because it is a project-based learning process. So the
 5 very earliest activities is designing an extremely
 6 simple type of building. I remember my first year it
 7 was a fire station, a fairly simple building, because
 8 the routes of circulation, the general arrangement is
 9 simple within the building.

10 From the beginning, students are encouraged by their
 11 tutors to design space, to arrange space in a way that
 12 will be generally compliant with legislation. Now, that
 13 deals with two things: it's routes of escape, routes of
 14 access, widths of staircases, all of that sort of thing,
 15 but it's also materials and technology. There is less
 16 on materials and technology, more on spatial planning,
 17 at the earlier parts of education; they gradually come
 18 closer together. But after a student has left
 19 university following their first degree, they'll have
 20 a year in an office, usually, and at that point they
 21 will start to accumulate considerable experience and
 22 knowledge about the Building Regulations.

23 The diploma course, part 2, that will be much more
 24 complicated buildings requiring a much better
 25 understanding of regulations and their application. But

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1 still it's not at the forefront.

2 After their second period out in an office,
 3 following part 2, they then can elect to take their
 4 part 3 exams, and at that point there are detailed and
 5 substantial lectures in Building Regulations.
 6 I remember mine were intense and prolonged, over a year,
 7 and very valuable.

8 Q. Are they still intense and prolonged to this day?

9 A. I think most people would say that they are in some
 10 respects less intense in terms of the depth of
 11 knowledge, detailed knowledge of Building Regulations
 12 that's required, but the agendas are wider, there's many
 13 more things to consider today than there were two and
 14 three decades ago. I used the example of ecologically
 15 responsible design. But I think that there's -- I can
 16 say, as an external examiner, I have been involved as
 17 a part 1, part 2 and part 3 examiner over the last
 18 25 years, and I have been examining part 3 in the last
 19 three years, I have been pleasantly surprised by the
 20 depth of investigation and detail that the students have
 21 gone into in terms of building legislation.

22 Q. Can we go to [INQ00014113], please. This is the ARB's
 23 prescription of qualifications criteria, as we can see,
 24 for parts 1, 2 and 3. Do you see?

25 If we can go to page 7 [INQ00014113/7], this sets

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1 out the general criteria at part 1 and part 2.

2 Now, just in general, would training in respect of
 3 the Building Regulations not also fall within GC11.1, if
 4 we can just see halfway down the page.

5 A. Yes, I see it.

6 Q. It says:

7 "The fundamental legal, professional and statutory
 8 responsibilities of the architect ..."

9 Do you see that?

10 So would training in respect of the Building
 11 Regulations not fall within that?

12 A. Yes, which one did you draw my attention to?

13 Q. Under GC11 --

14 A. Oh, I see.

15 Q. "The graduate will have knowledge of:

16 ".1 the fundamental legal, professional and
 17 statutory responsibilities of the architect, and the
 18 organisations, regulations and procedures involved in
 19 the negotiation and approval of architectural designs,
 20 including land law, development control, building
 21 regulations and health and safety legislation."

22 It looks from that, Mr Hyett, that the general
 23 criteria at part 1 and part 2, as prescribed by the ARB,
 24 would also encapsulate Building Regulations.

25 A. Yes, I don't see that as being at variance with what

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1 I was saying. This is part 1 and part 2, and
 2 I indicated a growing knowledge and awareness.

3 Q. Right.

4 A. Yes, I don't disagree with that. I haven't seen this
 5 before, by the way, but I don't disagree with it.

6 Q. Yes.

7 Do you think that it would be important for a client
 8 to be told whether the project architect on a project
 9 has the part 3 examination or not?

(Pause)

11 A. Again, it depends, I think, on the size of the project
 12 and the size of the office and a host of other issues.

13 Shall I address that question in relation to the
 14 size of project at Grenfell?

15 Q. Yes. Why not.

16 A. I think that provided the -- I'll call the person "the
 17 architect", but of course that's not an appropriate
 18 title because of protection of title. But if the person
 19 involved is not part 3 qualified, provided that the
 20 office framework, the office support around that person,
 21 is good and strong enough, then I don't think it
 22 necessarily is an issue, both in terms of the
 23 performance of that individual and in terms of advising
 24 the client.

25 But I think that a different way of looking at it

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1 would be to say: should an office in the first place put
 2 somebody in charge of a project who isn't a registered
 3 and fully qualified architect?
 4 Q. Taking the Grenfell Tower refurbishment project, then,
 5 do you consider that the lack of a pass at part 3
 6 examination would make a practical difference to the
 7 project leader's ability to execute its obligations on
 8 that project? When I say project leader, I mean the
 9 architect leading that part of the project team.
 10 A. I have to be careful here. I don't want to evade the
 11 line of your questioning here, but I can say that I have
 12 met and worked closely with architects who have not been
 13 part 3 qualified, they've had their part 1 and their
 14 part 2, and they have been gifted in the extreme.
 15 I know that there are many architects working at very
 16 senior positions in many well known firms who are not
 17 fully qualified, they haven't got their part 3.
 18 Generally speaking, I think it is a very useful
 19 thing to have taken part 3 because the kind of training
 20 that I was describing to you -- in my case, that took
 21 a year to carry out -- and the kind of training offered
 22 in schools of architecture around the country part-time
 23 for their part 3 is, in my view, extremely valuable if
 24 not invaluable in giving a general understanding of
 25 a host of agendas, from contracts and administration

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1 through to Building Regulations, which are certainly
 2 more useful to an architect to have than not to have.
 3 Q. Yes.
 4 Now, turning to fire engineering, on what aspects of
 5 fire engineering, if any, are architects typically
 6 trained?
 7 Perhaps I can ask the question slightly differently:
 8 are architects typically trained on any aspects of fire
 9 engineering?
 10 A. Well, fire engineering is a specialist discipline, and
 11 I've no doubt there are some architects who do extensive
 12 work in that field. I don't know of any. But
 13 a normally trained architect will have developed
 14 a considerable understanding of and respect for
 15 building control legislation around designing for fire,
 16 but they won't have the same kind of level of knowledge
 17 and skill that a trained fire engineer would have.
 18 Q. Right.
 19 Taking the architect's education process, are
 20 subjects such as reaction to fire, the difference
 21 between the euro classes, the difference between the
 22 euro classes and the national classes for fire
 23 classification, combustibility of materials, things like
 24 that, are they typically taught?
 25 A. At part 3, possibly. At parts 1 and 2, in my

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1 experience, unlikely.
 2 Q. When you say possibly, why is there a range of
 3 possibilities?
 4 A. I think the reason I said possibly is not that there may
 5 be a range of possibilities, but that I don't actually
 6 have that detailed knowledge of the part 3 curriculum at
 7 the moment, even though I have been examining in it.
 8 I haven't been teaching in it.
 9 Q. So you are not saying it depends from teacher to teacher
 10 or school to school?
 11 A. No. Schools vary greatly in part 1 and part 2, but when
 12 it comes to part 3, I think the course structures are
 13 very similar.
 14 Q. I see.
 15 Is there uniformity across architectural schools in
 16 terms of the topics they teach and the standards to
 17 which they teach them?
 18 A. I'll respond very concisely on that: no.
 19 Q. Thank you.
 20 Now, you graduated from your architectural
 21 training -- I think this is right -- in 1978.
 22 A. Yes.
 23 Q. Do you recall when you graduated that the Summerland
 24 fire had occurred, I think, in the Isle of Man, in the
 25 summer of 1973, I believe; is that right?

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1 A. Yes.
 2 Q. Do you remember that there was a report of the
 3 Summerland Fire Commission in May 1974?
 4 A. I couldn't pin a date on it. I do remember there was
 5 a report. I in fact remember the building inspector
 6 speaking on television, I remember seeing it.
 7 Q. Yes. Let's look at it, it's {FBU0000130} in the native
 8 form, please. There it is. Can we please turn to
 9 page 84. You can see there at paragraph 5 it says:
 10 "Architectural training should include a much
 11 extended study of fire protection and precautions."
 12 If we go back a little in this document to page 69,
 13 if we can go to paragraph 209 -- it's internal page 69,
 14 so it's six pages on in this document.
 15 You can see that it says, five lines down:
 16 "An assessment of safety, particularly fire safety,
 17 appears so far to have been generally neglected in
 18 architectural education."
 19 Looking at those two selections, selected quotations
 20 from the Commission report from that year, are you aware
 21 whether the recommendations here or these observations
 22 were ever put into practice, ever acted upon?
 23 A. I do not know.
 24 Q. You don't know whether or, if so, how these
 25 recommendations were implemented across the architecture

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1 schools?

2 A. I don't know. My involvement with architectural

3 education, apart from being a teacher in the 1980s, my

4 involvement at the IBA was from the middle 1990s

5 onwards. Summerland had happened well before then.

6 So the adoption of these recommendations, obviously

7 very important recommendations, I don't know what the

8 RIBA did at the time to adopt these. I am sure that

9 careful note was taken, but I cannot advise you what was

10 done.

11 Q. All right.

12 Just going back to the question of fire safety

13 engineering, or perhaps fire engineering and how it

14 impinges on architects' training, are architects

15 generally trained in the concept of "stay put" and the

16 principles of compartmentation?

17 A. I think the principles of compartmentation would be

18 understood by an architectural student on their way

19 through their courses, towards the end of part 1 and

20 certainly into part 2. I think the principles would be

21 understood by them.

22 You asked about compartmentation and a second ...?

23 Q. Well, the stay-put policy and related principles of

24 compartmentation.

25 A. Possibly not, the stay-put policy. In fact, I can't

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1 ever remember a design studio crit they have where they

2 review students' work in public -- I can't ever remember

3 a conversation about a stay-put policy in a scenario

4 like that.

5 Students working in offices during their first year

6 and second year out, if that office was an office doing

7 residential and they've got flats and apartments, it

8 would be picked up routinely and they would learn that

9 through the office that they're in.

10 Q. You said at the beginning of this exchange we have been

11 having that architects would start really looking at

12 projects, in other words their training was

13 project-based.

14 Is it your opinion that that is at risk of resulting

15 in a lack of experience of fire safety requirements,

16 particularly in high-rise buildings?

17 A. No.

18 Q. No.

19 A. Architects have to learn to shift and manipulate space

20 in the mind and the imagination. I won't go into any

21 detail unless you ask me further, but that's the first

22 thing they need to learn, then they need to know how to

23 make that space. It's critical, as they learn how to

24 make that space, that they start to understand fire,

25 fire regulations, escape, construction materials, but

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1 the first thing is to learn the shifting and

2 manipulating of space, otherwise you can't plan.

3 Q. Perhaps I wasn't quite clear.

4 If an architect's training is predominantly

5 project-based, how would that architect know what to do

6 in relation to fire safety if the projects they have

7 worked on throughout their career so far are low-rise

8 buildings?

9 A. If we focus at the moment on education, I think all

10 students on their way through college will have been

11 involved in larger and more complicated buildings.

12 I certainly was. By the time I got to my diploma, I was

13 involved in a very large scheme, some 200 apartments,

14 mixed with an opera house, mixed with a range of other

15 facilities, and in that course, which was project-based,

16 I had to research what was required, but I was tutored

17 to apply code to that building plan arrangement, and so

18 I had to actually describe the building in terms of its

19 construction. I remember going to structural engineers

20 to have advice on how I would fire protect the building.

21 That was in my fifth year at college. So pretty heavy

22 duty stuff, actually.

23 Q. Right. But if all you have ever worked on in practice

24 is low-rise buildings, such as, for example, schools or

25 gymnasiums or football stadiums, or buildings which are

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1 non-residential, or residential buildings which are

2 below 18 metres in height, what experience or expertise

3 would you ever build up which would be relevant to

4 high-rise buildings?

5 A. Well, we're designers, and we're trained to design and,

6 through design, to solve problems. So the fact that

7 an architect has not done in this case a building of the

8 scale and type at Grenfell doesn't to me suggest that

9 there's an immediate problem. The important thing is to

10 understand that code has to be researched, has to be

11 understood, has to be applied, and where advice is

12 needed from other specialists, either architects with

13 a particular experience in that area brought in to the

14 office as subcontractors or employed, alternatively out

15 to other consultants like a specialist fire consultant,

16 architects have to know that they must, in researching

17 the project, get the right experience into that project

18 as it develops.

19 Q. Yes, thank you.

20 Can I turn to a different topic, and I will try to

21 finish this in the next ten minutes, Mr Chairman, it's

22 entirely possible.

23 It's questions about your opinion in respect of

24 Studio E's competence to accept the brief for the

25 Grenfell Tower refurbishment project in the first place.

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1 So that's what I want to ask you about.
 2 Can I start by asking you to go, please, to
 3 {PHYR0000027/17}. Here we have paragraph 2.5.12(b) at
 4 the top of the page. Do you see that, Mr Hyett, there?
 5 A. Yes.
 6 Q. I just want you to look at this paragraph. You say,
 7 just above halfway down, after identifying the fact that
 8 Studio E doesn't appear to have had any significant
 9 experience in residential work or major refurbishment or
 10 high-rise development:
 11 "Consequently, I do not believe that their lack of
 12 experience in these areas provided a reason for them to
 13 decline the commission. I do, however, think that they
 14 had an express duty to ensure that the firm organised
 15 itself effectively in terms of preparation and
 16 resourcing for what was, for the practice, a new and
 17 challenging type of project. I do think, as stated
 18 above, that in this respect the standard of service that
 19 Studio E were obliged to provide was that which should
 20 be expected of a reasonably competent architectural
 21 practice holding itself out as competent to work on
 22 high-rise residential refurbishment and over-cladding
 23 works."
 24 Now, you say that; does that really summarise the
 25 view that you were expressing to me just a moment ago

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1 about what if they'd not had the experience?
 2 A. Yes.
 3 Q. Yes.
 4 Now, we know from the evidence that Studio E as
 5 a practice had no previous experience of high-rise
 6 residential overcladding projects.
 7 In your view, could achievement of this standard of
 8 service that you have identified here in your report
 9 ever realistically be achieved by CPD or research alone?
 10 A. Yes, I'm in no doubt that it could.
 11 Q. At paragraph 2.5.14, just below that on the page, you
 12 say:
 13 "Accordingly, it is my opinion that at the time of
 14 the appointment Studio E would rightly have considered
 15 themselves well able to undertake a project of the type,
 16 size and complexity of the Grenfell Tower refurbishment
 17 and over-cladding, albeit I would expect that they
 18 should have recognised that their then current levels of
 19 knowledge and skill would need to be expanded. This
 20 could have been done by undertaking research into the
 21 discrete characteristics of the project that they were
 22 about to undertake and, if necessary, making some
 23 strategic hires. Such approaches are common amongst
 24 architects when undertaking new commissions."
 25 Now, could that step have included bringing on

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1 a consultant resource to assist Studio E with specialist
 2 elements of the project?
 3 A. Absolutely.
 4 Q. Would you expect a firm in Studio E's position to
 5 consider employing the services of a façade consultant
 6 or façade engineer to assist Studio E with the design of
 7 the façade which they'd been appointed to carry out?
 8 A. No, I would expect them to look very hard at the
 9 problem, to satisfy themselves whether -- or to question
 10 of themselves whether they had resource in the office
 11 that could do the research necessary and develop the
 12 expertise necessary, or whether they should make
 13 a strategic hire, which is a separate question to the
 14 one you've asked, I know. But if I was not satisfied
 15 that we could do that, then I would look outside. But
 16 I think that their first port of call would have been to
 17 see whether they could do that work on their own.
 18 Q. What work stage would you consider that that looking to
 19 see whether they could do it on their own would take
 20 place?
 21 A. Like at the beginning.
 22 Q. At the beginning. Could it be done at a later stage,
 23 say D and E, or D or E?
 24 A. Well, time is ticking fast on a project. I know there
 25 were delays and hiccups on the progress of this one, but

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1 once the instruction comes and you're away with
 2 a project, you're moving pretty fast, and you're making
 3 decisions which are going to impact on work right
 4 through the various stages. So the foundations of the
 5 design work need to be right from the beginning.
 6 So I wouldn't want to be tackling a project at
 7 concept level without having a pretty good understanding
 8 of what I'm trying to achieve, because I might make
 9 mistakes which are going to lead to abortive work, upset
 10 to time and programme, and all the rest.
 11 Q. Can I ask you to see Neil Crawford's witness statement.
 12 That's {SEA00014275/74}, please. I would like to show
 13 you paragraph 241.
 14 He says here -- and you needn't worry about the
 15 email, which is the background and context for this
 16 paragraph -- in the second line:
 17 "In preparing this witness statement, I sought to
 18 recall more information about the relevant project and
 19 I believe it was the '3 & 4 Hardman Square,
 20 Spinningfields, Manchester' which Foster + Partners
 21 designed for Allied London, in and around 2004. I was
 22 the Project Lead for Foster + Partners, and I now recall
 23 that Arup Facades assisted in designing the cladding as
 24 a façade consultant with Metalbau Frueh as a
 25 subcontractor."

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1 Now, on the basis that Mr Crawford had been involved
2 in a previous cladding project that used a façade
3 consultant, would you expect that he, as the reasonably
4 competent architect, should have investigated retaining
5 or employing such a consultant on the Grenfell Tower
6 refurbishment?

7 (Pause)

8 A. I would be -- I think it's perfectly reasonable to
9 consider whether to do that or not. I also think it's
10 perfectly reasonable for an architect to proceed without
11 a specialist façades consultant on an overcladding
12 project of the kind we're talking about.

13 Q. Was it unreasonable of him not to have considered, even,
14 retaining an external façade consultant or façade
15 engineer, given his own experience?

16 (Pause)

17 A. I can't put myself in his shoes in terms of what view he
18 held of his own experience or not. I can only say that,
19 as an architect, if I was faced with this project,
20 I would not have shied away, for want of a better term,
21 from dealing with it, because I would have, following
22 initial research, decided the route I was going to go,
23 which would have been ADB2, and I would have considered
24 that I could have dealt with that with an able team
25 around me, albeit I would have wanted to have a fire

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1 consultant, a specialist fire consultant.

2 Q. Yes. You say, "I would have wanted to have a fire
3 consultant, a specialist fire consultant"; my question
4 is: would it have been unreasonable for you not to have
5 had a fire consultant?

6 A. I don't think they're absolutes, but the experience that
7 Studio E had would suggest this is a building type that
8 they haven't done before, it's certainly pretty
9 substantial and complex, one would have to make
10 an extremely good argument for not having a fire
11 consultant. That argument might be, "Well, we've been
12 doing these for 15 years and we know all about it, we've
13 got some highly specialised architects in the office who
14 have done ten of these before". But looking at it from
15 where they were coming from, I think that it would have
16 been very, very prudent -- it would have been important
17 for them to get a fire consultant and to use that fire
18 consultant properly.

19 Q. I'm sorry to press you, Mr Hyett, when you say it would
20 have been very, very prudent to get a fire consultant,
21 and to use that fire consultant properly, can we read
22 from that that it is your opinion that it would have
23 been imprudent for them not to have done so?

24 A. That particular firm, yes. I'm not saying that no
25 architect could have proceeded without, but that

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1 particular firm, a partner in that firm -- when we take
2 on work, we've got to be confident that we can deliver
3 what is required. We have to look at our resources, we
4 have to look at the skill, the size, and we have to
5 satisfy ourselves we can do that work, and do it with
6 a competence and a confidence. I wouldn't have wanted
7 to proceed on that without getting a fire consultant.

8 But may I just make one quick point? I, as
9 an architect, my own firm before I was with HKS, my own
10 firm undertook an immensely complicated building which
11 was all about fire, because it was a fire research
12 testing station. We did not go out to specialists. We
13 dealt with it ourselves.

14 So there is, you know, an answer. If you think you
15 can address the problem as an architect, as a designer,
16 then I think it's reasonable to proceed. But you would
17 have to make the case for why you wouldn't be going to
18 a specialist. And I think from where they sat, I would,
19 as a partner, have said, "We need a fire consultant on
20 this".

21 Q. Yes, and I think you have answered my question "yes",
22 but not to have done so was imprudent?

23 A. In this case, yes.

24 MR MILLETT: Thank you.

25 Mr Chairman, it's 4.30. I'm not that far off

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1 finishing this topic, but it could easily wait until
2 tomorrow morning.

3 SIR MARTIN MOORE-BICK: How far is not that far?

4 MR MILLETT: It depends on how far we get into things.
5 Ten minutes, probably.

6 SIR MARTIN MOORE-BICK: I think we might be wiser to call
7 a halt there, don't you?

8 MR MILLETT: That's right.

9 SIR MARTIN MOORE-BICK: Sometimes an estimate of ten minutes
10 turns into 15 or 20, Mr Hyett. Not always, of course,
11 but sometimes.

12 So I think we will stop there for the day. We will
13 resume at 10 o'clock tomorrow, please. Now you have
14 started giving your evidence, I have to ask you, please,
15 not to talk about your evidence or anything relating to
16 it to anyone while you're out of the room.

17 THE WITNESS: I will not.

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

19 Well, the usher, Laura, will look after you.

20 THE WITNESS: Thank you.

21 (Pause)

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

23 10 o'clock tomorrow, then, please.

24 MR MILLETT: Thank you, Mr Chairman.

25 SIR MARTIN MOORE-BICK: Thank you.

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1 (4.32 pm)
2 (The hearing adjourned until 10 am
3 on Tuesday, 3 November 2020) 91
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