



Grenfell Tower Inquiry

Day 125

May 5, 2021

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Wednesday, 5 May 2021

(10.00 am)

SIR MARTIN MOORE—BICK: Good morning, everyone. Welcome to today's hearing. Today we're going to hear evidence from one of the expert witnesses instructed by the Inquiry.

Yes, Ms Grange.

MS GRANGE: Yes, Mr Chairman, members of the panel, good morning.

Before I call Mr Jonathan Sakula, an expert witness to this Inquiry, I wanted to briefly explain the background to his involvement in the Inquiry.

As all core participants will already be aware, the Inquiry has been looking for some time to appoint an expert with knowledge of the cladding industry to assist the Inquiry with its investigations. On 26 October 2020, Jonathan Sakula, an expert with over 30 years' experience in the façade industry, was appointed as an expert to the Inquiry.

On 3 November 2020, he received a written set of instructions identifying a number of key questions, the answers to which were of particular interest to the Inquiry. By these questions, the Inquiry sought to gain a greater understanding and insight into the cladding industry in the period January 2012 to

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June 2017, and particularly about its state of knowledge during that time, including as to the fire risks posed by aluminium composite panels, ACM panels, with a PE, polyethylene, core.

Mr Sakula produced a report, a written report, in response to those questions on 13 March 2021, and hence his oral evidence is being heard at this stage in the Inquiry's timetable.

This also gives core participants the chance to hear his oral evidence in good time before the oral closing submissions in Modules 1 to 3.

For the avoidance of doubt, his evidence is primarily relevant to the issues which we explored in Module 1 of the Inquiry's work and sits with that evidence, rather than being relevant to the Module 3 evidence which you have been hearing in recent days.

So, with that brief introduction, I would now like to call Mr Jonathan Sakula to give his expert evidence.

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

MR JONATHAN SAKULA (affirmed)

SIR MARTIN MOORE—BICK: Thank you very much. Now, do sit down and make yourself comfortable.

Before Ms Grange begins examining you, I'm going to ask you to help us with one important but small point.

How should we pronounce your surname?

2

THE WITNESS: Sakula.

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

Yes, Ms Grange.

Questions from COUNSEL TO THE INQUIRY

MS GRANGE: Yes.

Thank you very much for coming to give your oral evidence as an expert to the Inquiry. We are very grateful to you for all your assistance.

Can I ask you to keep your voice up while you're giving your oral evidence, so that the transcriber, who is just sitting to your right, can get a clear record down of the evidence that you give.

It also helps if you say "yes" or "no" in response to my questions rather than shaking or nodding your head, so that there is a record on the transcript.

We will take a break at a convenient moment mid—morning and then again this afternoon.

Now, by way of a letter of instruction dated 3 November 2020, you were instructed by this Inquiry to answer a series of discrete questions, and those questions are helpfully set out at appendix A of your report. That's {JOS00000001/72}. Here we can see the annex to the instructions you were sent which sets out the questions that you were posed.

I'm just going to read out the first two paragraphs

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of that:

"The Inquiry wishes to understand more about the cladding industry in the period January 2012 to June 2017. In asking you about the state of knowledge within the cladding industry during that period, we would like to understand what a specialist cladding contractor exercising reasonable skill and care would have appreciated and understood about certain matters, as set out in the questions below. Except where indicated otherwise, we would ask you to examine the position (i) in England and Wales and (ii) in the rest of the UK, if possible.

"In providing an opinion on these matters we are particularly interested to know whether you can point to any industry conferences, journals and other publications, circulars or guidance available during the relevant period which provide objective evidence of the information that was available about these matters within the industry. To the extent that the position changed between 2012 and June 2017, please describe those changes when answering the questions and explain why they occurred. Please also explain any differences of opinion, understanding and practice within the industry during that period."

Then we can see that below that you were asked

4

1 a series of questions about the state of knowledge
2 within the cladding industry of various matters,
3 including in particular regarding the fire risks posed
4 by the use of ACM panels, including with a polyethylene
5 core.

6 Now, I'm not going to read out all those questions
7 at this stage. We will revisit many of those during
8 your evidence today.

9 Now, in response to those questions, you have
10 produced a written report.

11 If we go to the front page of that {JOS00000001/1},
12 this is the front page of your report of the façade
13 expert, and we can see there that it's dated
14 13 March 2021.

15 If we could go within the report to page 71, we can
16 see the same date, 13 March 2021. Is that your
17 signature there?

18 A. Yes.

19 Q. To confirm, you've structured your report by chapter,
20 each of which deals with the questions you were asked in
21 turn; is that correct?

22 A. Yes.

23 Q. Are the factual matters set out in your report true to
24 the best of your knowledge and belief?

25 A. Yes.

5

1 Q. Does your report accurately set out your true and
2 professional opinions on the matters you were asked to
3 consider?

4 A. Yes, it does.

5 Q. Thank you.

6 Now, I want to ask you some questions first about
7 your background and experience.

8 Now, in section 3 and appendix B of your report,
9 you've outlined your background and experience relevant
10 to matters to this Inquiry. If we can turn to section 3
11 at page 18 of this report {JOS00000001/18}, there you've
12 set out in detail your background.

13 I'm not going to go through the detail of all that,
14 but I'm going to highlight some key points which if you
15 can just confirm.

16 So is it right that you've worked in the
17 construction industry for over 45 years, and in the
18 façade industry in particular for almost 30 years?

19 A. Yes.

20 Q. And you have a degree in engineering from the
21 University of Cambridge, and you are a chartered
22 engineer, a fellow of the Institution of Structural
23 Engineers, and a fellow of the Institution of Civil
24 Engineers; is that right?

25 A. Yes.

6

1 Q. After studying engineering at university, you started
2 your career as a structural engineer with Arup, and
3 after a number of years working in the construction
4 industry here and abroad, you became a founder member of
5 Arup Façade Engineering in 1992; is that correct?

6 A. Yes.

7 Q. You then worked as a façade team leader for companies
8 including Dewhurst Macfarlane and Yolles and Halcrow,
9 before spending the last seven years of your full-time
10 career as the technical director for Buro Happold Façade
11 Engineering in London.

12 A. Yes.

13 Q. Can you just help us, and just explain the difference:
14 you've been a façade team leader for major construction
15 companies, and you've also been a technical director for
16 Buro Happold. Can you just explain the difference
17 between those roles?

18 A. Yes. The façade team leader would have had overall
19 responsibility for leading a team which would go beyond
20 the purely technical, it would involve dealing with
21 people and management issues and financial matters and
22 so on. The technical director's responsibility was
23 essentially more technically focused.

24 Q. Yes, thank you.

25 While at Buro Happold, you were also responsible for

7

1 technical co-ordination with Buro Happold's USA,
2 Middle Eastern and East African façade teams; is that
3 correct?

4 A. East Asian.

5 Q. Sorry, East Asian, sorry.

6 A. Yes, that's correct.

7 Q. Then before retiring in 2017, you worked as a principal
8 for Buro Happold's New York office, leading their façade
9 team; is that correct?

10 A. Yes.

11 Q. Can you explain what the role of a principal was within
12 Buro Happold when you were in New York?

13 A. It was a title of seniority, effectively. It was
14 probably one below being a partner.

15 Q. Right, yes, thank you.

16 What were your responsibilities as principal for
17 Buro Happold's New York office?

18 A. Leading the team, and, as I said before, it was
19 essentially dealing with the staffing, the management,
20 the financial, and in this case also some of the
21 technical issues involved.

22 Q. Yes. So you would still have technical issues referred
23 to you in that role?

24 A. Yes.

25 Q. Yes.

8

1 A. Although we did have a technical director as well.
 2 Q. Right. Yes.
 3 Is it right that since retiring, you've worked as
 4 a façade expert and consultant?
 5 A. Yes.
 6 Q. Yes.
 7 Now, you say at paragraph 3.5, if we just look at
 8 that, on page 18 of your report {JOS00000001/18}, so
 9 it's the page we're on:
 10 "During the course of my career I have worked on
 11 many projects, ranging from structural engineering for
 12 whole buildings and parts of buildings, to facade
 13 engineering and also research and development work. For
 14 the facade consultancy projects since 1992 I have worked
 15 at all stages of the construction process, for building
 16 owners, architects, main contractors and facade
 17 subcontractors. I have worked in the office as
 18 a designer/specifier and also on site inspecting new
 19 work and carrying out investigations where there were
 20 facade-related problems on existing buildings."
 21 Now, in terms of the sentence in the middle of that
 22 paragraph, you say:
 23 "For the facade consultancy projects since 1992
 24 I have worked at all stages of the construction
 25 process ..."

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1 Just to be clear, in terms of that sentence, do you
 2 mean that when working on façade projects and since 1992
 3 you've worked at all different stages of the
 4 construction process?
 5 A. Yes. I'm making that point only because, prior to 1992,
 6 I was working essentially as a structural engineer,
 7 whereas I started working as a façade engineer after
 8 1992.
 9 Q. Yes, thank you.
 10 Have you ever worked alongside or in the role of
 11 a cladding contractor as distinct from in the role of
 12 a cladding or façade consultant?
 13 A. I've never worked as a cladding contractor, but I have
 14 worked for cladding contractors.
 15 Q. Yes. And what's the extent of your experience working
 16 for cladding contractors?
 17 A. Essentially, it was working as an engineer, helping them
 18 with the detailed design of some of the more technical
 19 parts of the project. Typically of a structural nature,
 20 sometimes of a thermal nature.
 21 Q. Yes, thank you.
 22 At paragraph 3.3, slightly earlier on that page,
 23 higher up, you tell us four lines down that:
 24 "One of the projects that I led was the overcladding
 25 of a tall residential tower block in Hackney, East

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1 London."
 2 Can you help us, approximately when was that
 3 project? When did that take place?
 4 A. Approximately 1993.
 5 Q. And can you help us, was that tower block over
 6 18 metres?
 7 A. Yes.
 8 Q. Yes.
 9 A. It was 20 storeys.
 10 Q. Was that a refurbishment or a new—build project?
 11 A. It was a refurbishment.
 12 Q. Can you recall what overcladding materials were used?
 13 A. Yes, they were aluminium panels.
 14 Q. What type of aluminium panels? Were they aluminium
 15 composite panels or pure aluminium panels?
 16 A. Pure aluminium panels, yes.
 17 Q. Did the project involve the installation of insulation
 18 and cavity barriers behind the panels?
 19 A. Yes.
 20 Q. Can you remember what type of insulation was installed?
 21 A. I'm pretty sure it was mineral wool.
 22 Q. Right, yes. And what was your particular role in
 23 relation to that overcladding project?
 24 A. I was effectively leading our small team as the façade
 25 consultant to the Borough of Hackney.

11

1 Q. Right, yes. So you were employed by the London Borough
 2 of Hackney to act as a façade consultant?
 3 A. Yes.
 4 Q. So what was your involvement in terms of the design of
 5 that overcladding?
 6 A. We — there was an architect involved, and our role as
 7 façade engineer was simply to deal with the technical
 8 side of the cladding and write a specification and
 9 typical drawings showing the principles of the cladding.
 10 Q. Great, and then the architect, what, subsumed that work
 11 into its own work and took that forward?
 12 A. Yes.
 13 Q. Thank you.
 14 Now, you've set out some further selected project
 15 experience in your CV. If we could look at that, that's
 16 on page 77 of your report {JOS00000001/77}, in one of
 17 the annexes. We can see there at the bottom of that
 18 page you've listed a number of projects under the
 19 heading "Selected project experience".
 20 The final entry on that page we can see is the
 21 Stratford Eye Tower, London E15. You say that was a
 22 "Review of facade matters for main contractor for
 23 20—storey residential tower".
 24 Again, can you help us, roughly when was that
 25 project? When did that take place?

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1 A. That would have been about 2002/2003.
 2 Q. And it sounds like that was a building over 18 metres if
 3 it had 20 storeys; yes?
 4 A. Yes.
 5 Q. Again, can you help us, was that a refurb project or
 6 a new-build?
 7 A. That was a new-build.
 8 Q. Yes.
 9 What did your review of façade matters entail?
 10 A. Well, in that case, I was working for the main
 11 contractor as the client, my client, and was effectively
 12 helping the contractor deal with technical submissions
 13 from their own specialist subcontractor. So it would
 14 have been reviewing drawings, reviewing the technical
 15 submissions, and so on.
 16 Q. Yes, I see. Yes, so acting as a kind of checking
 17 mechanism for the main contractor —
 18 A. Yes.
 19 Q. — in terms of the subcontractor's façade design?
 20 A. Yes.
 21 Q. Yes.
 22 That review of façade matters, would that have
 23 extended as necessary to checking compliance matters,
 24 compliance with Building Regulations and associated
 25 guidance?

13

1 A. No, I don't recall it involving that, no.
 2 Q. Right, yes.
 3 Do you have any other experience of rainscreen
 4 overcladding projects on buildings over 18 metres?
 5 A. Not of overcladding projects, no.
 6 Q. Right, yes.
 7 Now, I want to ask you some more general questions
 8 now about the UK cladding industry.
 9 If we look at section 5 of your report on page 21
 10 {JOS00000001/21}, we can see that you provide some
 11 information about the nature of the UK cladding
 12 industry.
 13 I want to pick it up at paragraph 5.1.3. You say
 14 there that it may be helpful to explain briefly the
 15 nature and evolution of the UK cladding industry over
 16 the last 50 years. Then you go on at 5.1.4 to say:
 17 "During the 1970s and 1980s there was an increase in
 18 the penetration of the UK (and UK-related overseas)
 19 facade markets by facade contractors from countries in
 20 mainland Europe, for example from Italy, Germany,
 21 Switzerland, France and Holland. Design and technical
 22 staff from those countries had a relatively high level
 23 of technical education."
 24 Just pausing there, can you help us as to what it
 25 was that led to the increase in the penetration of the

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1 UK façade markets by these mainland European countries?
 2 Were there particular factors, circumstances, which led
 3 to that penetration of the market?
 4 A. It's interesting, the impression I have is that they
 5 were technically stronger, but of course this was before
 6 the time when I started my own work as a façade
 7 consultant, so I was looking — I'm looking back —
 8 Q. Yes:
 9 A. — prior to that. But the impression I got is that they
 10 were technically stronger and they started to dominate
 11 the market in the UK for projects which required that
 12 higher level of technical excellence.
 13 Q. Yes.
 14 When you tell us in that second sentence that I read
 15 that the design and technical staff from these countries
 16 had a relatively high level of technical education, what
 17 level of education are you referring to there?
 18 A. Well, the sort of — the tradition in Europe, countries
 19 like Germany, say, they had the tradition of technical
 20 high schools with a pretty good level of technical
 21 engineering type of education, probably better than
 22 Britain at that time.
 23 Q. Yes.
 24 A. And that's what I'm referring to.
 25 Q. Yes.

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1 A. And I think, without going too much off on a tangent,
 2 it's interesting that the technical world and the
 3 engineering world in mainland Europe was probably more
 4 developed or developing at that time than it was in
 5 Britain.
 6 Q. Yes. Are there any particular specialities that you
 7 noticed that in, where they were technically more
 8 advanced?
 9 A. Not specifically.
 10 I would also note that what was also interesting is
 11 that, in countries like Italy, there was a tendency to
 12 have a more joint engineering/architectural degree, not
 13 so much compartmentalised into engineering and
 14 architecture. So engineers and other people in the
 15 construction industry coming out of Italy, for example,
 16 would have had a stronger architectural sensibility,
 17 possibly, than those equivalents in the UK.
 18 Q. Yes.
 19 A. So that was probably a difference.
 20 Q. Yes. Yes.
 21 Was this a level of education and of technical
 22 speciality that UK cladding contractors did not possess
 23 at that time? Was that your perception?
 24 A. Well, as I say, I'm looking back here at the 1970s and
 25 1980s, before I actually became involved, and it's only

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1 based on my understanding of what took place at that
 2 time.
 3 Q. Yes.
 4 A. But, yes. Your question was ...?
 5 Q. Was it a level of education and technical speciality or
 6 expertise that these mainland Europe countries had that
 7 UK cladding contractors did not possess?
 8 A. I wouldn't say that the UK cladding contractors did not
 9 possess, it was just a question of relatively the
 10 mainland European ones were slightly stronger.
 11 Q. Yes. Thank you.
 12 You go on to say, just looking at the last third of
 13 that paragraph, 5.1.4, you say:
 14 "In more recent years, since 2000, the UK and
 15 international marketplace has also included facade
 16 contractors from China. Tender lists for large or
 17 complex buildings would therefore have comprised mainly
 18 such companies."
 19 Now, just to clarify, where you refer there to
 20 "mainly such companies" here, and you're referring to
 21 international cladding contractors, is that from both
 22 Europe and latterly China?
 23 A. Yes.
 24 Q. Yes. So you're saying that tender lists for large or
 25 complex buildings would therefore have comprised mainly

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1 companies from mainland Europe and latterly China; yes?
 2 A. Yes.
 3 Q. Now, you've used the expression there "tender lists for
 4 large or complex buildings"; can you help us as to what
 5 your definition is there of a large or complex building
 6 in the context you're referring to in that paragraph?
 7 A. Well, for example, I'm not including in that category
 8 low-rise, small buildings. A complex building is
 9 something which involves technical challenges going
 10 beyond the everyday.
 11 Q. Yes.
 12 A. The routine. A large building is something — you know,
 13 how large is large?
 14 Q. Yes, sure.
 15 A. Erm ...
 16 Q. No, I think that that's helpful.
 17 A. Large is ... I wouldn't like to put a number on it.
 18 Q. Yes.
 19 A. But I would include, for example, Grenfell Tower in
 20 the category large, although not complex.
 21 Q. Yes. I'm going to come back to that point in a moment.
 22 A. Yes.
 23 Q. You say in the paragraph below at 5.1.5:
 24 "By contrast, the UK facade contractors would have
 25 carried out the more routine facade work. In

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1 particular, overcladding work, of the kind used for
 2 Grenfell Tower, would normally have had mainly UK
 3 companies on the tender lists."
 4 So in terms of that paragraph, what type of work are
 5 you referring to there when you refer to UK cladding
 6 contractors would have carried out the "more routine
 7 facade work"?
 8 A. Well, as I've said, overcladding work of the kind used
 9 for Grenfell Tower, but I mean also facade work in
 10 general for relatively low-rise buildings, maybe
 11 10 storeys or so, and which didn't involve any
 12 particularly complex challenges.
 13 Q. Yes.
 14 Can you explain to us why the kind of work done at
 15 Grenfell Tower was in that category of the more routine
 16 facade work? Can you just help us with that?
 17 A. Yes. I mean, from a technical point of view, it wasn't
 18 particularly unusual, what they were doing on the
 19 outside of the building. They were putting up rails and
 20 putting up panels and insulation inside, and so on.
 21 That's been done quite a lot in Britain. So that's why
 22 I call it relatively routine.
 23 Q. Yes.
 24 Can you also help us understand why that work was
 25 ordinarily carried out by the UK facade contractors?

19

1 A. Well, I would imagine it's because companies from
 2 outside Britain wouldn't have bothered to bid for
 3 relatively routine projects —
 4 Q. Yes.
 5 A. — because they just wouldn't have been that interested
 6 in those. They would have bid for the ones where there
 7 was more of a challenge and, from a commercial point of
 8 view, there was more value in them for the overseas
 9 companies, they would have been more interested.
 10 Q. Yes.
 11 A. I would say probably from a commercial point of view the
 12 profit margins on these kind of projects in Britain
 13 would have been less attractive for an overseas company.
 14 Q. Yes.
 15 You go on to say, if we look a little bit down that
 16 page at 5.1.6, that:
 17 "In considering the state of knowledge within the
 18 cladding industry therefore, I shall consider only the
 19 typical UK-based contractors, and not the international
 20 players referred to above."
 21 Can you just explain that, why you're only
 22 considering the state of knowledge by reference to those
 23 UK-based contractors?
 24 A. Well, because I've been asked to address the state of
 25 knowledge within the UK cladding industry —

20

1 Q. Yes.
 2 A. — so it didn't seem relevant, therefore, to consider
 3 the major international players.
 4 Q. Yes.
 5 Now, considering what you've said about the European
 6 and Chinese contractors penetrating the market from at
 7 the latest around 2000, can you help us as to whether
 8 the domestic cladding industry benefitted from the
 9 increased knowledge and expertise of those international
 10 contractors when they entered the market?
 11 A. Yes, I would imagine they would, mostly through
 12 interchange of staff. People throughout their careers
 13 work for different companies and pick up knowledge from
 14 the places they worked.
 15 Q. Yes. So, in your opinion, did the domestic cladding
 16 industry benefit in terms of its technical knowledge and
 17 expertise from that penetration by international façade
 18 contractors?
 19 A. Yes, I imagine they probably did, yes.
 20 Q. Now, if we can turn to paragraph 2.3.2 on page 16 of
 21 your report {JOS00000001/16}, you say there:
 22 "In section 5, I give a summary of the nature of the
 23 UK cladding industry, differentiating between the
 24 UK-based cladding contractors dealing with overcladding
 25 projects such as on Grenfell Tower and the 'top tier'

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1 international façade contractors. In considering
 2 'reasonable skill and care' I am considering that which
 3 is applicable to UK cladding contractors carrying out
 4 overcladding work similar to that on the Grenfell Tower
 5 refurbishment. While the level of technical expertise
 6 of such contractors may be slightly less than that of
 7 their international counterparts, I consider that the
 8 expected level of 'reasonable skill and care' is the
 9 same."
 10 So you're explaining to us there the approach you've
 11 taken, is that right, to the expected level of
 12 reasonable skill and care; yes?
 13 A. Yes.
 14 Q. And even though you've noticed this difference between
 15 the technical experience and expertise, you've still
 16 applied a consistent standard to that question; is that
 17 right?
 18 A. Yes.
 19 Q. Yes, thank you.
 20 Now, you say at paragraph 2.4.1, a little bit
 21 further down on that same page, 16, that in addressing
 22 questions about the state of knowledge within the
 23 cladding industry, you're not able to provide
 24 statistical evidence to back up your opinions and that
 25 your views are based on your own experience.

22

1 Now, do you accept that the state of knowledge
 2 within the cladding industry can sometimes be inferred
 3 from widespread practices adopted within the industry?
 4 A. Yes.
 5 Q. Just turning now to manufacturers, I want to ask you
 6 some general questions now about the relationship
 7 between cladding contractors and manufacturers.
 8 If we can look at paragraph 2.2.3 on page 16 —
 9 that's this same page, just a bit further up — you say
 10 here, picking it up a little bit into the first line:
 11 "... a cladding contractor deals with a wide range
 12 of products, so would not be expected to be as
 13 knowledgeable as the manufacturer, for each product.
 14 The cladding contractor would therefore rely, to a large
 15 extent, on the information and certification provided by
 16 the manufacturer."
 17 Now, when you're talking about manufacturers there,
 18 just to be clear, are you referring to cladding
 19 manufacturers only or would you include insulation
 20 manufacturers there as well?
 21 A. Yes, I would include manufacturers of all products
 22 involved in the process, including insulation
 23 manufacturers.
 24 Q. Yes, thank you.
 25 To what extent would you expect a reasonably

23

1 competent cladding contractor to be reliant on
 2 manufacturers for advice about the fire safety of their
 3 products?
 4 A. I think they would be quite reliant upon them. The
 5 manufacturers, as I've said, are the people who are
 6 dealing very much with their particular product and
 7 would be expected to be very conversant with the
 8 legislation about their product, and the cladding
 9 contractors would rely on them to a very large extent,
 10 unless there was some reason to doubt the advice that
 11 they were being given, in which case they might want to
 12 take independent advice on that.
 13 Q. Yes, thank you.
 14 What about suppliers or fabricators now: to what
 15 extent would you expect a reasonably competent cladding
 16 contractor to be reliant on suppliers or fabricators of
 17 cladding products for advice about the fire safety of
 18 those products?
 19 A. Well, by suppliers, could you just define what you mean
 20 by that, as distinct from manufacturers?
 21 Q. Effectively middlemen between the manufacturer of, say,
 22 the cladding panels and a supplier.
 23 A. Okay.
 24 Q. Often maybe a supplier and fabricator of those panels.
 25 A. Okay. I wouldn't expect the supplier and fabricator to

24

1 be particularly knowledgeable on that sort of subject,
 2 no.
 3 Q. Yes.
 4 Now, back to manufacturers, would you expect
 5 a manufacturer to volunteer information relating to the
 6 fire safety of its products, or simply respond to direct
 7 questions from the cladding contractor?
 8 A. I would expect them mostly to respond to questions from
 9 the cladding contractor.
 10 Q. Right. Yes.
 11 A. Yes.
 12 Q. Can you help us as to why you say that, rather than
 13 expecting the manufacturer to be volunteering
 14 information about the fire safety of its products?
 15 A. Well, I'm not commenting here on what is right, I'm only
 16 commenting on what I would expect to happen.
 17 Q. Yes, I understand.
 18 A. The manufacturer provides marketing literature and other
 19 technical literature to the — and they're trying to
 20 sell a product, and generally they're happy to sell it
 21 unless questions are asked, and then they answer those
 22 questions and so on. It's not in their interest to cast
 23 doubt about the usefulness of their products, so they
 24 wouldn't tend to volunteer information unless they
 25 thought it would lead to a sale.

25

1 Q. Right, yes.
 2 Would you expect the reasonably competent cladding
 3 contractor to have enough technical knowledge to be able
 4 to interrogate a manufacturer's claims about the fire
 5 performance of its products?
 6 A. Could you repeat the first part of that question?
 7 Q. Yes. Would you expect the reasonably competent cladding
 8 contractor to have enough technical knowledge —
 9 A. Yes.
 10 Q. — to be able to interrogate a manufacturer's claims
 11 about the fire performance of its product?
 12 A. Yes, although I would qualify that by saying that if the
 13 proposed usage fitted perfectly with the literature
 14 provided by the manufacturer —
 15 Q. Yes.
 16 A. — I wouldn't expect them to question it.
 17 Q. Yes.
 18 A. But I would expect them to question it if they were
 19 proposing something that was different, or even slightly
 20 different, from that being proposed for which the
 21 technical information applied.
 22 Q. Yes.
 23 What about a reasonably competent cladding
 24 contractor, would you expect them to be able to pose
 25 appropriate questions to be able to fully understand

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1 a product's fire performance?
 2 A. Yes.
 3 Q. Yes.
 4 Would you expect a cladding contractor to have
 5 a deeper knowledge and understanding about the fire
 6 performance of a particular product if that contractor
 7 had significant experience of working with a particular
 8 cladding product?
 9 A. Yes.
 10 Q. Would you expect them to have a deeper knowledge and
 11 understanding about the fire performance of a particular
 12 product if they'd designed and installed systems
 13 containing such material on several occasions before?
 14 A. Yes.
 15 Q. Yes, thank you.
 16 Now, just some general questions now about how the
 17 reasonably competent cladding contractor would have
 18 interpreted the Building Regulations and the guidance in
 19 Approved Document B in the period we're looking at
 20 between 2012 and 2017.
 21 Later in my questioning I will be asking you some
 22 more specific questions about particular elements of the
 23 cladding system at Grenfell Tower, including the ACM and
 24 the insulation, with reference to the regulatory
 25 framework, but at this stage these are more general

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1 questions about that framework.
 2 Do you agree as a general proposition that cladding
 3 contractors should have regard to the
 4 Building Regulations, the approved documents and
 5 associated guidance as a whole and, so far as possible,
 6 interpret them consistently with one another?
 7 A. Yes.
 8 Q. Do you consider that reasonably competent cladding
 9 contractors and product manufacturers should have regard
 10 to the purpose and intent of the Building Regulations
 11 and the approved documents where the purpose and intent
 12 are clear and apparent?
 13 A. Yes.
 14 Q. If we can look at page 61 of your report
 15 {JOS00000001/61} at this point, and paragraph 17.11.
 16 We'll come back to this section of your report later
 17 when we're looking specifically at the ACM panels, but
 18 just picking up on what you say there, you say:
 19 "I note, however, that ADB [that's Approved
 20 Document B, the statutory guidance] ... is not itself
 21 the Building Regulations and that the 2010 Building
 22 Regulation B4(1) itself states ... "
 23 Then you set out a quote from that part of the
 24 Building Regulations, from the functional requirements.
 25 Now, in your experience and in general terms, can

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1 you help us as to what regard was paid to the approved
 2 document on fire safety, ADB, in the cladding industry
 3 over the period 2012 to 2017?
 4 A. Well, I think most practitioners in the industry would
 5 have given very high regard to ADB2, and would have
 6 regarded that as being the thing that they needed to
 7 satisfy, rather than the original Building Regulation
 8 itself.
 9 Q. Yes. So is it fair to summarise that it was seen by
 10 cladding contractors as an authoritative source of
 11 guidance to compliance with the Building Regulations?
 12 A. Yes.
 13 Q. Did that ever change over that period? Was there, as
 14 far as you were aware, ever a time when less attention
 15 was paid to Approved Document B on fire safety, or would
 16 that have been consistent throughout?
 17 A. I wouldn't say that less attention was paid to it, but
 18 I think during the period in question leading up to
 19 2017, there was a growing concern about the clarity of
 20 guidance given in ADB2, particularly section 12.
 21 Q. Yes. I'm going to come back to that, because you make
 22 that point in your report, and particularly with
 23 reference to some of the other guidance that was
 24 available at the time. So I will come back to that.
 25 Just sticking with the general points, do you agree

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1 that any reasonably competent cladding contractor would
 2 have known and understood the fundamental importance of
 3 complying with the fire safety requirements concerning
 4 the design and construction of an external cladding
 5 façade as set out in the Building Regulations and
 6 Approved Document B?
 7 A. They would have understood the importance of, did you
 8 say?
 9 Q. Yes, the fundamental importance of —
 10 A. Yes.
 11 Q. — complying with that.
 12 A. Yes, yes, absolutely.
 13 Q. Sorry, it's a very general but important question.
 14 A. Yes.
 15 Q. Would a reasonably competent cladding contractor expect
 16 that if they complied with Approved Document B, then
 17 that would ensure compliance with the functional
 18 requirements in the Building Regulations?
 19 A. Yes.
 20 Q. Did you yourself ever have experience in any of the
 21 projects you worked on of the guidance in approved
 22 documents, perhaps in any of them, whether ADB or any of
 23 the other guidance documents, becoming out of date
 24 compared with good industry practice?
 25 A. Yes, I suppose — as I said earlier, the sense I had was

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1 that the requirements of ADB2, for example, particularly
 2 section 12, as I've mentioned —
 3 Q. Yes.
 4 A. — seemed to me to have been lagging behind what was
 5 going on in the rest of the industry.
 6 Q. Yes.
 7 A. Yes.
 8 Q. You've given that example; were you ever aware of any
 9 other examples where it was known that if you followed
 10 Approved Document B or any of the other approved
 11 documents, that wasn't consistent with good industry
 12 practice?
 13 A. I can't recall any, no.
 14 Q. Okay, thank you.
 15 Do you consider that when approaching its design
 16 work, any —
 17 A. Sorry, could I just make a —
 18 Q. Yes.
 19 A. — general point here?
 20 What's interesting in all regulations, codes and
 21 standards is that they're never updated on a daily
 22 basis, that's the nature of these things, obviously, and
 23 they're only updated from time to time, and as technical
 24 knowledge progresses, there will always be a slight time
 25 lag.

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1 Q. Yes.
 2 A. And it's a question of what time lag is reasonable,
 3 really.
 4 Q. Yes, I understand.
 5 A. And the sense I was getting during those years was that
 6 the time lag in relation to the lack of clarity on parts
 7 of ADB2 was getting unreasonable.
 8 Q. Yes, that's helpful, thank you.
 9 Do you consider that the reasonably competent
 10 cladding contractor would have started any design work
 11 by considering the functional requirements themselves
 12 before moving on to the guidance in Approved Document B,
 13 or would you expect the reasonably competent cladding
 14 contractor to go straight to the guidance in ADB?
 15 A. I would expect the latter.
 16 Q. Yes.
 17 Now, in the context of the work of an architect,
 18 the Inquiry's architectural expert, Mr Hyett, has
 19 explained that it would be good practice for
 20 an architect to prepare a note setting out the key
 21 statutory requirements relevant to any design early in
 22 the design process. So that's a note for internal
 23 purposes at the beginning of a design process
 24 encapsulating what the statutory controls are that the
 25 design needs to comply with.

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1 Would you expect a reasonably competent cladding
 2 contractor to do the same, ie to seek to summarise
 3 somewhere in a working document the relevant provisions
 4 of the Building Regulations and approved documents or
 5 other guidance which were going to be relevant to the
 6 design of a particular façade?
 7 A. I wouldn't necessarily expect them to summarise that in
 8 a document, but I would expect them to go through the
 9 various requirements as a sort of checklist and make
 10 sure that what was being proposed complied.
 11 Q. Yes.
 12 A. I wouldn't necessarily expect them to produce a document
 13 to that effect.
 14 Q. Right. But would there be some kind of record of that
 15 checklist exercise having been carried out, in your
 16 experience?
 17 A. I can't recall exactly, but it's — I wouldn't be able
 18 to say.
 19 Q. No, fair enough.
 20 Now, in your opinion, should a reasonably competent
 21 cladding contractor have been familiar with functional
 22 requirement B3, which deals with internal fire spread,
 23 as well as part B4 on external fire spread?
 24 A. I wouldn't have thought they would have been so
 25 conversant with B3, no.

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1 Q. Do you agree that the reasonably competent cladding
 2 contractor ought to have been familiar with section 9 of
 3 Approved Document B, which deals with concealed
 4 spaces/cavities, as well as section 12 of ADB, as both
 5 were relevant and applicable to the design and
 6 construction of an external cladding façade?
 7 A. Yes.
 8 Q. Just some questions now about Approved Document B and
 9 the routes to compliance within that document.
 10 If we could turn first to section 9 of Approved
 11 Document B, which is at {CLG0000224/82}. So this is
 12 section 9 that I was just referring to dealing with
 13 concealed spaces/cavities. It's under the B3 section of
 14 Approved Document B under the internal fire spread
 15 section.
 16 We can see there that paragraph 9.1 begins:
 17 "Concealed spaces or cavities in the construction of
 18 a building provide a ready route for smoke and flame
 19 spread. This is particularly so in the case of voids
 20 in, above and below the construction of a building, e.g.
 21 walls, floors, ceilings and roofs. As any spread is
 22 concealed, it presents a greater danger than would
 23 a more obvious weakness in the fabric of the building."
 24 Now, would you expect that the reasonably competent
 25 cladding contractor would be aware of the warnings that

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1 we see in that paragraph?
 2 A. Yes, yes. Could I just add one point here?
 3 Q. Yes.
 4 A. I notice here that section 9 occurs within B3.
 5 Q. Yes.
 6 A. I'd forgotten that. So when I answered earlier that
 7 I wouldn't have expected them to know about B3, I have
 8 to modify that by saying that, yes, they should have
 9 known about section 9.
 10 Q. Yes, thank you.
 11 A. Yes.
 12 Q. Then we can see a heading below that paragraph,
 13 "Provision of cavity barriers", and at 9.2 it says:
 14 "Provisions for cavity barriers are given below for
 15 specified locations. The provisions necessary to
 16 restrict the spread of smoke and flames through cavities
 17 are broadly for the purpose of sub-dividing."
 18 Then it talks about subdividing cavities and
 19 extensive cavities in the next part.
 20 So, again, would you expect a reasonably competent
 21 cladding contractor to be familiar with the guidance
 22 here given for specified locations in terms of
 23 cavity barriers?
 24 A. Yes.
 25 Q. We can see below that we've got diagram 33, which gives

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1 guidance as to where cavity barriers — if we can just
 2 scroll down the page and look at diagram 33 in its
 3 entirety. Yes, so here we've got guidance within this
 4 document about the location of cavity barriers. We can
 5 see that that guidance includes, can you see it says on
 6 the left, "Close around openings", and you've got grey
 7 shading in the cavity there, and also "Close top of
 8 cavity" further up that wall line. Do you see that?
 9 A. Yes.
 10 Q. If we read on to paragraph 9.3 on the following page
 11 {CLG0000224/83}, we can see that it states there that:
 12 "Cavity barriers should be provided to close the
 13 edges of cavities, including around openings."
 14 Do you see that?
 15 A. Yes.
 16 Q. So, again, would you expect that the reasonably
 17 competent cladding contractor ought to have been aware
 18 of the guidance in diagram 33 and paragraph 9.3 about
 19 the need for cavity barriers to close, including around
 20 openings?
 21 A. Yes.
 22 Q. Also, would you expect them to be aware of the guidance
 23 on closing the top of a cavity that's given in
 24 diagram 33?
 25 A. Yes.

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1 Q. Now, turning to the guidance on functional requirement
 2 B4 in section 12 of ADB, if we can go back to your
 3 report at this point, in section 15 of your report on
 4 page 55 {JOS00000001/55}, you have explained at 15.1
 5 there that the Building Regulations and the applicable
 6 guidance document effectively gives three routes to
 7 compliance within regulation B4, the limitation of
 8 external fire spread. You've explained in the first
 9 bullet what you describe — and you can see this at the
 10 end of that text — as the linear route. So that's the
 11 guidance in 12.7 and clauses 12.6 to 12.9 of ADB; yes?
 12 A. Yes.
 13 Q. Then you've given guidance on what you're referring to
 14 in your report as the fire test route, which is
 15 clause 12.5 refers to the BR 135 document and BS 8414
 16 testing, and that's the fire test route; yes?
 17 A. Yes.
 18 Q. Then you have referred to the fact that much earlier in
 19 Approved Document B, in the introductory paragraphs,
 20 clause 0.30 allows fire safety engineering to be carried
 21 out, and that that could involve a holistic view of the
 22 building, which would be an alternative route to
 23 compliance; is that correct?
 24 A. Yes.
 25 Q. Now, in your opinion, would the reasonably competent

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1 cladding contractor in the period we're concerned with,
 2 2012 to 2017, have been aware of both the linear route
 3 and the BR 135/8414 testing route in section 12 of ADB?
 4 A. Yes.
 5 Q. And in respect of that linear route, would you expect
 6 the reasonably competent cladding contractor to
 7 understand that assessing whether an external cladding
 8 system would adequately resist the spread of fire over
 9 the walls required consideration of the fire performance
 10 of each of the components of the cladding system,
 11 including the particular type of panel and the
 12 insulation specified for the system?
 13 A. Yes.
 14 Q. Yes.
 15 Would you also expect them to understand that the
 16 requirements of the linear route — I think it follows
 17 from your previous answer but I just want to be clear —
 18 was cumulative, ie compliance with only one of them was
 19 not sufficient?
 20 A. Correct, yes.
 21 Q. Yes, thanks.
 22 Now, some questions now about the concept of desktop
 23 assessments as a route to compliance.
 24 Staying with page 55 of your report {JOS00000001/55}
 25 and looking at paragraph 15.2, you tell us there:

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1 "'Limited combustibility' is tested, if following
 2 the national class system in Table A7 of ADB, in
 3 accordance with BS 476—11 ..."
 4 Then you explain what that requires, and then you go
 5 on:
 6 "Recognising that materials of limited
 7 combustibility were not always used, and considering it
 8 to be too onerous to require a system fire test for
 9 every external wall type, the Building Control Alliance
 10 (BCA) published their Technical Guidance Note 18
 11 (Issue 0 June 2014 and Issue 1 June 2015). This is
 12 discussed in more detail in Section 10.5 of the present
 13 report. These documents suggested that a 'desktop
 14 study' could be carried out by a competent fire
 15 specialist, provided that it was based on
 16 an extrapolation from previous relevant fire testing."
 17 So you've explained to us the genesis of that
 18 desktop study route.
 19 At 15.3 below that you say:
 20 "From my experience there was awareness within the
 21 cladding industry of these alternatives. However, on
 22 considering what cladding contractors in particular
 23 would have been aware of, my opinion is that they would
 24 have been mostly aware of either the 'linear' route or
 25 the 'fire test' or 'desk study' routes. I do not think

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1 they would normally have been aware of the 'fire safety
 2 engineering' route, as this would not have been common
 3 on the sort of buildings worked on by UK cladding
 4 contractors."
 5 Now, can you just help us as to how it was that
 6 cladding contractors were aware of the possibility of
 7 doing a desktop study as a distinct route of compliance
 8 in the relevant period, despite it not being identified
 9 separately in ADB: is that solely because of BCA
 10 Technical Guidance Note 18 or was there a more general
 11 awareness in the industry about desktop assessments?
 12 A. Well, I think it probably originated from
 13 Technical Guidance Note 18, but following that, I think
 14 the concept of a desktop study seemed to me to be quite
 15 common, but it must have originated from that note
 16 number 18.
 17 Q. Yes. When you say the concept was quite common —
 18 A. Well, commonly known, sorry.
 19 Q. Commonly known, yes.
 20 Were you aware of many buildings where the desktop
 21 route was followed?
 22 A. Yes. I think it was not un — it was ... because not
 23 every building was fire tested and because not every
 24 building followed the linear route, the idea of desktop
 25 study as an alternative was not uncommon, and yes, I am

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1 aware of some.
 2 MS GRANGE: Yes.
 3 SIR MARTIN MOORE-BICK: Sorry, can I just interrupt to ask
 4 this: why was it not reasonably feasible for people to
 5 follow the linear route if they couldn't follow the
 6 fire test route? I mean, why was it necessary to embark
 7 upon the desktop study route at all?
 8 A. Well, it's interesting, because it may be that testing
 9 can show that materials which wouldn't satisfy the
 10 linear route could nevertheless be used in the system.
 11 For example, it may be, within certain constraints, that
 12 insulation which was combustible or partly combustible
 13 used in a certain way could nevertheless pass the test,
 14 and therefore one didn't have to go the linear route.
 15 And so the desktop study was a way of saying: okay, if
 16 the condition I've got is rather similar to one which
 17 has already passed the test, then a specialist could
 18 say, "Well, yes, it's going to be all right then".
 19 SIR MARTIN MOORE-BICK: Although he could presumably have
 20 chosen to follow the linear route.
 21 A. Yes. They could have done, yes.
 22 SIR MARTIN MOORE-BICK: So presumably there was some
 23 economic interest in not doing that.
 24 A. Yes. I mean, firstly, doing fire testing is relatively
 25 costly, and I guess, interestingly, they wanted to use

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1 certain products, and they wouldn't have been able to
 2 use certain products if they'd had to follow the linear
 3 route because they didn't comply.
 4 SIR MARTIN MOORE-BICK: Yes. All right. Thank you.
 5 MS GRANGE: Yes, and I think in terms of that last answer,
 6 you're thinking particularly of insulation products
 7 which wouldn't have satisfied the limited combustibility
 8 requirement in 12.7; is that right?
 9 A. Yes.
 10 Q. Yes.
 11 Can you just help us, I think it follows from some
 12 of the answers you gave earlier about the complexity of
 13 projects, but why it was that the fire safety
 14 engineering route, a bespoke engineering route, would
 15 not have been common on the sort of buildings worked on
 16 by UK cladding contractors?
 17 A. Well, as I understand it, and I'm not — it's quite
 18 an uncommon thing to do, and it tends to be used on
 19 complex buildings which don't have regular walls or
 20 regular façades, and generally speaking it involves
 21 a level of sophistication which would not have been
 22 appropriate to the sort of more routine cladding
 23 projects done in the UK.
 24 Q. Yes.
 25 Now, if we turn to page 59 of your report now

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1 {JOS00000001/59}, paragraph 17.2, you set out here for
 2 us helpfully the text of clause 12.5 of Approved
 3 Document B, which reads:
 4 "The external envelope of a building should not
 5 provide a medium for fire spread if it is likely to be
 6 a risk to health or safety. The use of combustible
 7 materials in the cladding system and extensive cavities
 8 may present such a risk in tall buildings."
 9 So those are the introductory words to 12.5 of ADB.
 10 You say at the beginning of the next paragraph:
 11 "As written, this clause acts as a general
 12 introduction to the requirements."
 13 Now, appreciating what you say there about it being
 14 a general introduction to what follows in section 12, in
 15 your opinion, would the reasonably competent cladding
 16 contractor also have read this as a health warning which
 17 should have been borne clearly in mind when the reader
 18 was considering the paragraphs which did follow from
 19 12.5?
 20 A. Yes.
 21 Q. Can you help us: what weight or priority ought to have
 22 been given to that text there of 12.5 when considering
 23 the paragraphs that follow, in your view?
 24 A. Well, I think the way I would read this — well, the way
 25 I think most practitioners in the industry would have

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1 read this, is this is of an introductory nature. It
 2 says that the use of combustible materials may present
 3 such a risk. It then goes on to specify in more detail
 4 in the following clauses what the specific requirements
 5 were for the external skins of the building and the
 6 insulation and cavity barriers and so on. So I think
 7 those more detailed requirements in the mind of the
 8 reader would have outweighed the more general
 9 introductory requirements of 12.5.
 10 Q. Right, yes.
 11 Now, if we look at the top of page 52 of your report
 12 {JOS00000001/52}, we can see that you were asked some
 13 questions by the Inquiry about the awareness and
 14 understanding within the cladding industry of certain
 15 matters, including national class 0, the European
 16 classification regime, that's EN 13501, and the BS 8414
 17 test route with the BR 135 criteria.
 18 Now, just focusing for a moment on the understanding
 19 within the industry of the European classifications and
 20 the national classifications, including national
 21 class 0, if we look at page 53 of your report
 22 {JOS00000001/53}, one page on, in 14.9 at the bottom of
 23 that page, you say:
 24 "BS EN 13501 gives the Euronorm classifications for
 25 resistance to fire, as discussed above. It uses

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1 different test methods from those in BS 8414—1 and
 2 BS 8414—2 and also the classifications are different .
 3 In my experience, UK cladding contractors during the
 4 period being assessed would not have been familiar with
 5 the EN classifications and they would normally have
 6 referred to 'Class 0'. Manufacturers would probably
 7 have had a better understanding of the
 8 EN classifications , but would have tailored their
 9 approach in the UK to what the UK industry was familiar
 10 with, so would have referred mostly to 'Class 0'."

11 When you say there that the UK cladding contractors
 12 would normally have referred to class 0, do you mean
 13 that the reasonably competent cladding contractor would
 14 have been more familiar with the national
 15 classifications rather than the European ones?

16 A. Yes.

17 Q. Can you help us as to why that was the position, in your
 18 opinion?

19 A. I think it was just because of history .

20 Q. Yes.

21 A. I mean, from the UK perspective, class 0 pre-dated the
 22 EN classifications and people hadn't quite absorbed the
 23 EN classifications yet. I think in the last five years
 24 it's probably changed or changing, and things are
 25 a little bit different now. But at that time people

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1 were still very much talking about class 0.

2 Q. Yes, because that's what they were familiar with
 3 historically ?

4 A. Yes.

5 Q. Yes.

6 We know, however, that diagram 40 of Approved
 7 Document B does refer to the European classifications,
 8 so class B, class C, as well as the national
 9 classifications . That's correct, isn't it ?

10 A. Yes.

11 Q. Were you aware that under UK procurement rules,
 12 specifications for public projects were required to be
 13 couched in terms of European standards to allow
 14 competition from European contractors?

15 A. Yes.

16 Q. Now, taking those points into consideration, would you
 17 agree that the reasonably competent cladding contractor
 18 ought to have been familiar with the European
 19 classifications over the period 2012 to 2017?

20 A. Well, this is interesting , because you're talking about
 21 European procurement rules, and I suspect that the
 22 sort of projects we're talking about may have come below
 23 the threshold of requiring the European procurement
 24 rules to apply, I'm not sure. But should they have been
 25 familiar with those EN standards? Again, some would

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1 have been, some weren't. I can't say they should have
 2 been.

3 Q. Right. Even though Approved Document B is itself
 4 referring to those European classifications in
 5 diagram 40?

6 A. Yes, it does, but it also refers to class 0, and they
 7 probably would have thought: well, that's good enough,
 8 if it refers to class 0, we'll deal with that.

9 Q. Yes.

10 In your opinion, did that position change? You
 11 alluded to the fact that there has been an evolution in
 12 terms of everybody's thinking, but thinking of the
 13 position , say, in 2012 in contrast to the position in ,
 14 say, 2015, would you have expected there to have been
 15 more awareness three years later?

16 A. Yes, there was a growing awareness.

17 Q. Yes.

18 A. And I would say, yes, it's been growing since then as
 19 well, yes.

20 Q. So can we agree that there would have come a point
 21 between 2012 and 2017 when the reasonably competent
 22 cladding contractor would have been expected to have at
 23 least some familiarity with the European classification
 24 system?

25 A. Yes.

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1 Q. Can you help us as to — I know this is a difficult
 2 question — roughly when in time you think that ought to
 3 have been the case?

4 A. I can't really answer that, sorry .

5 Q. Okay.

6 Now, you say at paragraph 14.11 of your report on
 7 page 54 {JOS00000001/54}, this is staying with the
 8 class 0 point:

9 "I think that most cladding contractors considered
 10 that 'Class 0' referred broadly to a fire rating, with
 11 an emphasis on the surface spread of flame, and that is
 12 what I would have expected from a reasonably competent
 13 cladding contractor. However, in my experience that did
 14 not apply to all , and occasionally I have come across
 15 confusion between the idea of Class 0 and general
 16 combustibility."

17 So you say there that you have occasionally
 18 encountered confusion between that concept of class 0
 19 and general combustibility .

20 Can I just clarify precisely what you mean when
 21 you're referring to confusion: do you mean that some
 22 cladding contractors thought that class 0 meant that
 23 a product would be non-combustible?

24 A. I wouldn't go as far as to say that they thought it was
 25 non-combustible, but they thought it conferred some

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1 sense of limited combustibility, I would say.
 2 Q. Yes, and you're using the words "limited combustibility"
 3 not in the technical sense there —
 4 A. No.
 5 Q. — but in a more general sense; is that right?
 6 A. More general sense, yes.
 7 Q. So, say, reduced combustibility, would that be —
 8 A. Yes.
 9 Q. Yes.
 10 Was there a perception in the cladding industry that
 11 class 0 was of relevance to a product's combustibility,
 12 that a class 0 product would not burn or would not burn
 13 badly?
 14 A. I think it was perceived that class 0 was essentially
 15 relating to a surface property of the product, although
 16 we know that it's a combination of a surface flame test
 17 and another kind of test. But I think, to take your
 18 term, there was a perception that it implied that it
 19 would not burn badly, yes.
 20 Q. Yes.
 21 A. Yes.
 22 Q. Can you help us as to how that perception had come
 23 about?
 24 A. Well —
 25 Q. What was it that had led people to believe that

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1 a class 0 product would not burn badly?
 2 A. Well, interestingly, it was the only fire requirement
 3 for cladding materials that was in the ADB —
 4 Q. Yes, you mean in 12.6 and diagram 40?
 5 A. In diagram 40, as far as the external surface was
 6 concerned, and so it was probably perceived that that
 7 was the fire requirement, and therefore it was perceived
 8 that that was implying that the cladding of a building
 9 wouldn't burn so as to cause a problem.
 10 MS GRANGE: Yes.
 11 Now, you've referred to two educational courses
 12 provided by the CWCT, that's the Centre for Windows —
 13 SIR MARTIN MOORE—BICK: Ms Grange, I'm sorry to interrupt
 14 you, because my mind is working while you're asking
 15 questions.
 16 MS GRANGE: Yes, yes.
 17 SIR MARTIN MOORE—BICK: Mr Sakula, as far as you know, did
 18 people in the cladding industry understand that class 0
 19 was essentially relating to the properties of the
 20 surface of a material, or I think a lining material, not
 21 to the body of material?
 22 A. Yes. That's what was — what I've said is that most
 23 people, I think, understood that, but I'm not saying
 24 everyone did, and I've come across people who perceived
 25 that it was some sort of more general fire resistant

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1 classification .
 2 SIR MARTIN MOORE—BICK: But the fact that you think that
 3 most people were aware of its true relevance might be
 4 taken to suggest that a reasonably competent cladding
 5 contractor would be aware of that?
 6 A. Yes.
 7 SIR MARTIN MOORE—BICK: Is that your view?
 8 A. Yes, that's my view.
 9 SIR MARTIN MOORE—BICK: That's helpful, thank you.
 10 I'm sorry, Ms Grange.
 11 MS GRANGE: No, no, it's very helpful, thank you.
 12 So you've referred to two educational courses
 13 provided by the Centre for Windows and Cladding
 14 Technology, the CWCT, and you've referred to those at
 15 paragraph 7.4.2.2 on page 31 of your report
 16 {JOS00000001/31}, if we can just look at that.
 17 So there you're talking about:
 18 "Some of the short courses ..."
 19 And this is relevant to the CWCT:
 20 "... made reference to fire matters, but the main
 21 courses wherein fire matters were covered in more detail
 22 were ..."
 23 And then you give details of the two courses where
 24 fire matters were covered in more detail.
 25 Now, the first of those is course C101, the

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1 "Standard for systemised building envelopes — principles
 2 and specification", and that was a two-day course which
 3 was given between 2007 and 2010, you tell us there, and
 4 it included a lecture entitled "Fire".
 5 I just want to look at the lecture material from
 6 that "fire" section. That's at {CWCT0000079/4}. So
 7 there is the class 0 section of this fire lecture.
 8 So this is a lecture given, just to be clear again,
 9 between 2007 and 2010, so earlier than the period we're
 10 looking at, and we can see this slide here which is
 11 called "Class 0", and it says:
 12 "■ Class 0 is not a classification in
 13 a British Standard method of test.
 14 "■ It is defined in the Building Regulations which
 15 makes use of BS performance ratings to limit both:
 16 "■ Spread of flame across the surface of a material
 17 or product (BS 476—7)
 18 "■ The rate of heat release from it (BS 476—6)."
 19 Can we agree here that any person who was the
 20 recipient of this course material would have realised
 21 that there was no reference to combustibility in the
 22 definition here, it's about surface spread of flame and
 23 the rate of heat release; yes?
 24 A. Yes.
 25 Q. Below that is another bullet that reads:

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1 "Such materials/products are generally required to
 2 be non-combustible or to have a class 1 surface spread
 3 of flame."
 4 Now, can I just check: how do you read that? Do you
 5 read that as suggesting that class 0 materials or
 6 products were generally required to be non-combustible
 7 or have a class 1 surface spread of flame?
 8 A. Yes, but I would also say that the definition of class 0
 9 requires a class 1 surface spread of flame plus
 10 a certain rating in terms of heat release in accordance
 11 with part 6.
 12 Q. Exactly, yes. Thank you.
 13 Then if we can turn to the second course that you've
 14 referred to in your report, if we go back to page 31 of
 15 your report {JOS00000001/31}, 7.4.2.2, you have referred
 16 to a course CWDC "Curtain wall design and construction
 17 [for building professionals]". That was a four-day
 18 course given from 2007 onwards, so, again, several years
 19 before the period we've particularly looked at, and
 20 included a lecture entitled "Fire performance of
 21 facades".
 22 If we can look at the slides for that lecture,
 23 that's at {CWCT0000083}, we can see that this is
 24 a lecture called "Fire performance of facades".
 25 If we turn to page 6 {CWCT0000083/6}, we can see

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1 a slide entitled "Spread of flame" this time, and it
 2 refers to class 0. Do you see that there in the first,
 3 BS 476?
 4 A. Yes.
 5 Q. Then if we go on to page 7 {CWCT0000083/7}, we can see
 6 exactly the same information is given about the nature
 7 of class 0, precisely what is tested, and that they're
 8 generally required to be non-combustible or have
 9 a class 1 surface spread of flame; yes?
 10 A. Yes.
 11 Q. So bearing those course materials from the CWCT in mind,
 12 and just to be absolutely clear about your evidence —
 13 and I think this follows from your answer to
 14 the Chairman's questions, but I'm going to pose it
 15 nevertheless — do you consider that a reasonably
 16 competent cladding contractor ought not to have been
 17 confused as between class 0 and the combustibility of
 18 a material or product?
 19 A. Correct, yes.
 20 MS GRANGE: Yes, thank you.
 21 Mr Chairman, just looking at the time, I'm about to
 22 move to a different topic, which is about other key
 23 industry guidance documents.
 24 SIR MARTIN MOORE-BICK: Would you like to have a break at
 25 that point?

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1 MS GRANGE: Yes, please. This would be a good moment.
 2 SIR MARTIN MOORE-BICK: All right.
 3 Mr Sakula, you probably know we have a break during
 4 the morning and the afternoon, and this is a good time
 5 to take it, so we shall take it now. We will resume at
 6 11.30.
 7 I think I should say the same to you as I've said to
 8 others: please don't discuss your evidence with anyone
 9 while you're out of the room. All right?
 10 Thank you very much. Would you like to go with the
 11 usher.
 12 THE WITNESS: Thank you.
 13 (Pause)
 14 SIR MARTIN MOORE-BICK: 11.30, then.
 15 MS GRANGE: Thank you.
 16 (11.16 am)
 17 (A short break)
 18 (11.30 am)
 19 SIR MARTIN MOORE-BICK: All right, Mr Sakula, ready to carry
 20 on?
 21 THE WITNESS: Yes, thanks.
 22 SIR MARTIN MOORE-BICK: Good, thank you.
 23 Yes, Ms Grange.
 24 MS GRANGE: Yes, thank you.
 25 Yes, Mr Sakula.

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1 A. Can I just add something, just before you kick off?
 2 Q. Of course, yes, please.
 3 A. I was thinking about an answer I gave to a question
 4 earlier when you were asking me about what date the
 5 sort of transition took place between the knowledge of
 6 the class 0 and the Euronorm approach.
 7 Q. Yes.
 8 A. And I was thinking it was probably more like 2017.
 9 Q. Right.
 10 A. And the reason I say that is because I remembered during
 11 the break that the CWCT had published a technical
 12 note —
 13 Q. Yes.
 14 A. — at the beginning of 2017 —
 15 Q. Yes.
 16 A. — which made a comparison between the Euronorms and the
 17 British Standard classifications, so that would have
 18 been around the time when there was a growing awareness
 19 of that.
 20 Q. Yes, is that Technical Guidance Note 98, I think?
 21 A. Yes.
 22 Q. Yes, and I'll take you to that guidance at some point.
 23 A. Oh, okay.
 24 Q. No, no, that's extremely helpful, thank you.
 25 I now want to ask you some questions about some of

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the industry guidance documents that you consider in your report and which are relevant to the knowledge that a reasonably competent cladding contractor would have had in the relevant period.

If we can start with the BR 135 publication, that is referred to, as we know, in clause 12.5 of ADB, and if we turn to page 41 of your report {JOS00000001/41}, paragraph 10.3.1, you say:

"BR 135 is a report by the Building Research Establishment (BRE) entitled 'Fire performance of external thermal insulation for walls of multi-storey buildings'. Following the 1st edition dated 1988, there was a 2nd edition dated 2003 and a 3rd edition dated 2013."

Then you go on in the next paragraph:

"BR 135 (3rd edition) contains two Annexes, A and B, setting out in detail the method by which fire performance results of testing to BS 8414-1 and BS 8414-2 may be classified."

Then you make clear there in parenthesis:

"The 2nd edition had contained only Annex A, dealing with masonry backing walls, since at the time of publication BS 8414-2 had not been published."

And you go on:

"It is these performance criteria which are

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specifically referenced in ADB2 clause 12.5, and that gives BR 135 great importance in assessing the question of compliance with ADB2."

Now, so in a nutshell, would it be fair to say that you attribute great importance to the BR 135 document in large part because it is expressly referred to in paragraph 12.5 of Approved Document B?

A. Yes.

Q. And you then go on and say this at 10.3.3 just below that:

"I would expect most specialist cladding contractors in the period January 2012 — June 2017 to have been aware of the existence of BR 135 (2nd or 3rd edition), because of its reference in clause 12.5 of ADB ... I would imagine, however, that most of them would not have read it or understood exactly how the tests were classified. Some of the more conscientious and technically aware specialists would probably have studied BR 135 and so would have had a better understanding of how the classifications were made."

So in that paragraph you are explaining the extent to which you think in fact specialist cladding contractors would or would not have read and studied that document, BR 135.

Focusing now on what a reasonably competent cladding

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contractor would have done if involved in an overcladding project like Grenfell Tower, in your opinion, would a reasonably competent specialist cladding contractor have read the main guidance in BR 135, not the annexes but the main guidance in that document, even if they would not have understood precisely the tests or their classifications?

A. Well, it's as I've said in my report, I think the more conscientious technical people would have done.

I wouldn't like to say that I would have expected all reasonably competent cladding contractors to have read it.

Q. Yes.

A. I simply say that I would have expected them to have been aware of its existence.

MS GRANGE: Right.

SIR MARTIN MOORE-BICK: I mean, would it be fair to say that, as far as the cladding contractor is concerned, he needs to be aware of what you called earlier the fire test approach, but he didn't need to be aware of the complexities or the details of it because either he was going to be presented with a document from somebody well qualified to say it has passed BS 8414 and BR 135 requirements, or he's not?

A. Yes.

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SIR MARTIN MOORE-BICK: So for him, the no doubt interesting technical aspects of BR 135 weren't really essential to get on top of, were they?

A. Yes, I think I would agree with that. It's not to say that — there's a lot of good information in BR 135, it's just that I wouldn't say that I would condemn them for not having read it all, if that's the word.

MS GRANGE: Yes.

SIR MARTIN MOORE-BICK: Yes, all right, thank you very much.

MS GRANGE: Yes, thank you.

Yes, just following on from that, it's right, isn't it, that BR 135 contains a lot of general information about external fire spread and the risks posed by it, as well as technical detail about the testing and the classifications of the testing?

A. Yes.

Q. Yes.

If we just look at BR 135, the third edition, for a moment. So this is the one dated 2013. It's at {BRE00005555/2}. There it is, the third edition, "Fire performance of external thermal insulation for walls of multistorey buildings".

If we turn to page 13 {BRE00005555/13}, here we can see a diagram. It's figure 3, "Mechanisms for external fire spread by way of the external cladding system". We

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1 can see it's graphically illustrating there what can
 2 happen where you get flaming on or near the façade, and
 3 the ways in which that can break out and then spread up
 4 the façade and break back in; yes?
 5 A. Yes.
 6 Q. Then on page 14 {BRE00005555/14}, the next page, there
 7 are a number of warnings. So if we look at section 3.3
 8 here, "Interaction with the external envelope", if we
 9 pick it up three lines down in that paragraph, it says:
 10 "Once flames begin to impinge upon the external
 11 fabric of the building, from either an internal or
 12 an external source, there is the potential for the
 13 external cladding system to become involved, and to
 14 contribute to the external fire spread up the building
 15 by the following routes."
 16 Then a number of routes are identified.
 17 Immediately below that we see 3.3.1, "Surface
 18 propagation":
 19 "The reaction to fire characteristics of the
 20 materials used within the external cladding system will
 21 influence the rate of fire spread up the building
 22 envelope by way of the surface of the external cladding
 23 system."
 24 Then below that we can see it says, 3.3.2,
 25 "Cavities":

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1 "Cavities may be incorporated within an external
 2 cladding system or may be formed by the delamination or
 3 differential movement of the system in a fire. If
 4 flames become confined or restricted by entering
 5 cavities within the external cladding system, they will
 6 become elongated as they seek oxygen and fuel to support
 7 the combustion process. This process can lead to flame
 8 extension of five to ten times that of the original
 9 flame lengths, regardless of the materials used to line
 10 the cavities. This may enable fire to spread rapidly,
 11 unseen, through the external cladding system, if
 12 appropriate fire barriers have not been provided ..."
 13 Now, appreciating what you've said about whether
 14 a reasonably competent cladding contractor should have
 15 read this document in any detail, concentrating on those
 16 particular features that I just took you to and those
 17 warnings about the potential for external fire spread,
 18 including in cavities, would you have expected
 19 a reasonably competent cladding contractor to have
 20 appreciated those potential features of fire spread in
 21 cladding systems?
 22 A. Yes, I would.
 23 Q. Yes. So even though they may not have read this cover
 24 to cover, you would have expected them to have been
 25 aware of those features, including, for example, flame

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1 elongation in cavities?
 2 A. I think the specific example of flame elongation is
 3 quite specialised and it's possible they wouldn't have
 4 been aware of that, but the other points made about the
 5 potential for fire to travel up and around the external
 6 cladding system, I think they would have understood
 7 that. But specifically about flame elongation, perhaps
 8 not.
 9 Q. When you say they would have understood that, should
 10 they have understood that if they were embarking on
 11 a cladding project of the like of Grenfell Tower?
 12 A. Yes.
 13 Q. Yes.
 14 Going back to your report at page 41
 15 {JOS00000001/41}, section 10.3, you say at 10.3.3 there:
 16 "I would expect most specialist cladding contractors
 17 in the period January ..."
 18 Sorry, we've just read this, and you say that most
 19 would not have read or understood exactly how the tests
 20 were classified. Some of the more conscientious would
 21 probably have studied it.
 22 Now, focusing now on the tests under BS 8414 and how
 23 they were classified according to BR 135, do you
 24 consider that the reasonably competent cladding
 25 contractor or at least someone within its organisation

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1 should have understood how the tests were classified
 2 under BR 135, ie that there were pass/fail criteria?
 3 A. I'm sure they would have known there were pass/fail
 4 criteria but they may not have known the details of how
 5 they were arrived at.
 6 Q. Right. But ought they to have understood that once
 7 tested to BS 8414, there would then need to be
 8 a separate process of classification of the system under
 9 BR 135?
 10 A. Yes, because, I mean, that's what ADB2 says.
 11 Q. Yes.
 12 How much should that reasonably competent cladding
 13 contractor have understood about how those
 14 classifications were arrived at in relation to the
 15 system?
 16 A. Well, as I said, I don't think they would have
 17 understood the details of how those particular
 18 classifications were arrived at.
 19 Q. Right. But would they have understood that there would
 20 be a mechanism for assessing the extent of flame spread
 21 across that façade, as part of that system, as part of
 22 that classification/examination?
 23 A. Yes, I mean, to be clear, as I understand it, BR 135
 24 talks about pass or failure —
 25 Q. Yes.

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1 A. — rather than classification, and they would have
 2 understood that it's a fire test. I'm not sure it was
 3 specifically about flame spread only, it was an overall
 4 fire test.
 5 Q. Yes, and it's about temperature rise, et cetera.
 6 A. Yes.
 7 Q. There's other aspects of it.
 8 A. Yes.
 9 Q. So to what extent would they have had an understanding
 10 of what you would need to do to pass that fire test?
 11 A. They would have had an understanding that a test needed
 12 to be carried out on a full-scale sample.
 13 Q. Yes.
 14 A. They may not have understood the pass/fail criteria
 15 relating to a certain temperature being reached at
 16 a certain height above the fire.
 17 Q. Yes.
 18 A. They may not have understood that specifically, but they
 19 would have understood the general principle that it was
 20 a full-scale fire test.
 21 Q. Yes, that's helpful, thank you.
 22 Looking at page 49 of your report now
 23 {JOS00000001/49}, we can see at the top of the page you
 24 were asked some questions, and you've set them out at
 25 the very top of the page, about the extent to which it

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1 was common for specialist cladding contractors to
 2 request fire test evidence from manufacturers or
 3 suppliers of cladding products.
 4 We can see further down the page at subquestion (b)
 5 on that page, you were asked:
 6 "How common was it for specialist cladding designers
 7 or contractors to ask manufacturers of cladding products
 8 for information relating to their fire test performance
 9 in addition to that contained in publicly available
 10 product literature?"
 11 Do you see that?
 12 A. Yes.
 13 Q. You answer at 12.2 below that. You say this:
 14 "I cannot answer this question directly, as I am
 15 unsure how common it would have been, in practice, for
 16 cladding designers or contractors to seek further fire
 17 test information. However, I would have expected them
 18 to seek further information if their proposed system did
 19 not conform exactly to the system for which any test
 20 certificate was issued."
 21 So do you agree that it would be important that
 22 cladding contractors did understand enough about BR 135
 23 and 8414 testing to be able to assess whether their
 24 system conformed to the system for which a test
 25 certificate had been issued?

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1 A. Yes, in writing this, I was thinking more about the
 2 BBA certificate, and that, rather than any certificate
 3 produced by the test house, if you like, because they
 4 just give a report rather than a certificate.
 5 Q. Yes.
 6 A. But all I'm saying here is that if the tested system
 7 matched exactly what was being proposed to be built,
 8 I wouldn't expect them to go back and question the test.
 9 Q. Yes.
 10 A. Whereas if there were some variation being proposed,
 11 then I would expect them to be questioning more: what
 12 was the original test based on?
 13 Q. Yes. Would you expect them to understand that if going
 14 down the BR 135/8414 route, their system needed to
 15 replicate precisely the system that was tested?
 16 A. Yes.
 17 Q. So they'd need to know that much about it?
 18 A. Yes. Yes.
 19 Q. Now, another set of guidance documents that you refer to
 20 are BS 9999 from 2008 BS 9991 from 2011.
 21 If we look at page 40 of your report
 22 {JOS00000001/40}, paragraph 10.2.3, you helpfully
 23 explain here that:
 24 "These codes of practice contain information
 25 covering a range of topics relating to fire. Taking

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1 BS 9991 as an example, there are 10 sections. For the
 2 purposes of a cladding contractor, the important part in
 3 my opinion is Section 6, covering 'Design for
 4 construction'. This section repeats much information
 5 from ADB2, but is not identical. For example,
 6 clause 29.2 is headed 'External fire spread over the
 7 external faces of buildings'. Among other things it
 8 states ..."
 9 Then you've given us the quote from BS 9991. It
 10 says:
 11 "This [control of flame spread] is particularly
 12 important where a stay put strategy ... is in place.
 13 Combustible materials should not be used in cladding
 14 systems and extensive cavities."
 15 So you have noted that there is that particular
 16 piece of guidance in BS 9991 which we don't have in
 17 ADB2; yes?
 18 A. Yes.
 19 Q. Let's look at that in BS 9991. This is in the 2015
 20 version, which we find at {BSI00000059}.
 21 We can see the full title of that British Standards
 22 Institute publication, "Fire safety in the design,
 23 management and use of residential buildings — Code of
 24 practice".
 25 Then on at section 18.2 on page 86 {BSI00000059/86},

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1 we can see, if we read just the first few paragraphs
 2 under 18.2, that's headed "External fire spread over the
 3 external faces of buildings", it states there:
 4 "External walls should be constructed using
 5 a material that does not support fire spread and
 6 therefore endanger people in or around the building.
 7 "Flame spread over or within an external wall
 8 construction should be controlled to avoid creating
 9 a route for rapid fire spread bypassing compartment
 10 floors or walls."
 11 Then there is a note. It says there:
 12 "This is particularly important where a stay put
 13 strategy ... is in place."
 14 Based on your experience, would a reasonably
 15 competent cladding contractor have an awareness of and
 16 an understanding of this part of BS 9991?
 17 A. I don't think they would have been aware of this
 18 particular part in a general sense.
 19 Q. Right.
 20 A. I do think, had it been referred to in their
 21 specification or contract documents, they should have --
 22 they would have been made aware of it, in that way. But
 23 in a general sense, I don't think they would have been
 24 aware of this.
 25 Q. Yes.

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1 More generally, would they understand what
 2 a stay-put strategy was and its significance in the
 3 context of external façade design?
 4 A. I can't really say.
 5 Q. Right.
 6 A. You would have thought so, but I'm speculating about
 7 what a third party understood by something.
 8 Q. Yes, no, I understand.
 9 A. I don't know.
 10 Q. But to your knowledge, was a stay-put strategy something
 11 that was understood in the cladding industry between
 12 2012 and 2017 in terms of what that meant?
 13 A. I can't answer categorically, but I would say on the
 14 balance of probabilities, probably yes.
 15 Q. Yes, okay. Yes.
 16 You suggest at 10.2.5 at page 41 of your report
 17 {JOS00000001/40} that you would expect -- I think this
 18 follows from what you have just said -- a cladding
 19 contractor to be aware of the existence of BS 9991 and
 20 BS 9999 but not to be familiar with their contents; yes?
 21 A. Yes, mainly because, as I've said, because much of the
 22 information, in fact most of the information, is
 23 a repeat of the requirements of ADB2 --
 24 Q. Yes.
 25 A. -- they probably wouldn't have thought it particularly

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1 significant to read these in detail.
 2 Q. Yes. So would it only be where their specific contract
 3 documents had that as a listed specification that --
 4 A. Yes.
 5 Q. -- you would expect them to consult it?
 6 A. Yes.
 7 Q. Yes.
 8 You make that point at 10.2.5 on page 41, it's there
 9 in front of us. You say, picking it up three lines
 10 down:
 11 "However, if the documents were specifically
 12 referenced in the cladding contractor's contract or the
 13 specification I would expect the cladding contractor to
 14 have referred to them, and in particular to have read
 15 clauses ..."
 16 And then you give particular clauses which are
 17 relevant to external flame spread in those documents.
 18 In your experience, were these British Standards
 19 routinely included in a cladding contractor's contract
 20 or were they routinely omitted?
 21 A. From memory, I would say it was typical to include them.
 22 Q. Yes.
 23 Just thinking more generally, and not specifically
 24 about these British Standards, but more generally about
 25 guidance, would you expect the reasonably competent

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1 cladding contractor who subcontracts some or all of
 2 their work package -- say the design element, say that's
 3 subcontracted to another contractor -- to have referred
 4 that subcontractor to any guidance documents or
 5 standards that were in the contractor's contract?
 6 A. Sorry, could you say the first part of your question
 7 again?
 8 Q. Yes. So where you have a reasonably competent cladding
 9 contractor who subcontracts some or all of their package
 10 of work, say including the design element --
 11 A. Yes.
 12 Q. -- to another party, would you have expected them to
 13 have referred the subcontractor to any guidance
 14 documents or standards that were in the contractor's
 15 contract?
 16 A. Yes.
 17 Q. Yes, thank you.
 18 Would you expect the reasonably competent cladding
 19 contractor to have a system to ensure that these were
 20 appropriately considered by the relevant subcontractor?
 21 A. Yes.
 22 Q. And would you also expect the cladding contractor to
 23 have a supervisory system to ensure that the work
 24 produced was compliant with statutory compliance as well
 25 as any relevant guidance documents or standards?

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1 A. Yes.
 2 Q. So some form of checking regime which went beyond simply
 3 ensuring that a subcontracted designer kept to
 4 programme; yes?
 5 A. Yes.
 6 Q. Yes.
 7 What steps would you expect the reasonably competent
 8 cladding contractor to undertake to ensure supervision
 9 of a design subcontractor was adequate from a technical
 10 perspective?
 11 A. I think they would have to list from the specification
 12 the key elements that had to be met, and also go over
 13 the requirements of the Building Regulations that had to
 14 be met and produce some sort of checklist, I suppose.
 15 Q. Yes.
 16 A. And then when the design came back, they would have to
 17 check that they conform with that checklist.
 18 Q. Yes, thank you. Yes, that's helpful.
 19 Now, just staying with the general topic of
 20 guidance, industry guidance, now turning to guidance
 21 produced by the CWCT, the Centre for Windows and
 22 Cladding Technology, if we go to page 42 of your report
 23 {JOS00000001/42}, paragraph 10.4.2, you tell us there
 24 that:
 25 "The CWCT has in 2020 more than 350 members,

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1 comprising mainly architects, consultants, main
 2 contractors, specialist contractors, suppliers and
 3 manufacturers. Of these, specialist contractors
 4 represent about 40% of the membership, which is
 5 a significant proportion."
 6 So that's what you tell us there about membership of
 7 the CWCT.
 8 Just in more general terms, how well known was the
 9 CWCT amongst cladding contractors in the period 2012 to
 10 2017?
 11 A. I would say it was very well known.
 12 Q. What were the reasons why it was very well known?
 13 A. Well, because it was a technical umbrella organisation
 14 for the UK cladding industry, and it did all sorts of
 15 things, it produced technical reports, it ran courses,
 16 and it had an MSc programme in façade engineering, a lot
 17 of people did that in the industry.
 18 Q. Yes.
 19 A. I would say it would be very surprising if any cladding
 20 contractor wasn't aware of it.
 21 Q. Yes.
 22 A. And it was a central body for the UK façade and cladding
 23 industry.
 24 Q. And does it follow that any guidance that was issued by
 25 the CWCT was generally very closely looked at by

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1 cladding contractors?
 2 A. Yes.
 3 Q. Yes.
 4 Now, if the contract or specification for the
 5 project required compliance with the CWCT's standard for
 6 systemised building envelopes, and we know that that
 7 standard was dated September 2008 — let's just pull it
 8 up on the screen so we can see it. It's at
 9 {CWCT0000046}. So that's the standard for systemised
 10 building envelopes. The date is not on this front page
 11 but I can tell you it's dated 2008, and it has part 6,
 12 "Fire performance", within it, as you can see on that
 13 front page.
 14 Now, if the contract or specification for the
 15 project required compliance with this standard, do you
 16 agree that any reasonably competent cladding contractor
 17 would read and seek to understand that standard,
 18 including part 6, "Fire performance"?
 19 A. Yes.
 20 Q. You have told us — we don't need to go to this, for the
 21 transcript this is at 10.4.4 on page 42 of your report
 22 {JOS00000001/42} — that the CWCT standard, this one,
 23 the standard for systemised building envelopes, was the
 24 most important document produced by the CWCT. Is that
 25 correct?

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1 A. Yes, I think so.
 2 Q. Can you explain why it was the most important?
 3 A. Well, it was wide-ranging, firstly.
 4 Q. Yes.
 5 A. They produced all sorts of technical notes and technical
 6 updates as well, and they were on very specific
 7 subjects. This was quite a wide-ranging standard which
 8 covered the whole of the façade.
 9 But also, in the absence of a British Standard which
 10 covered the whole of the façade, this became de facto
 11 the British Standard.
 12 Q. Yes. Would you have said that most reasonably competent
 13 cladding contractors would have thought of this as
 14 effectively akin to a British Standard in this field?
 15 A. Yes.
 16 Q. Yes.
 17 Just to be clear, so it was more important than,
 18 for example, there was a guide to good practice for
 19 façades which was published by the CWCT in 1996 and
 20 re-printed in 2002; yes?
 21 A. Yes, I would have thought this is more important.
 22 Q. Yes, because it's more wide-ranging and comprehensive?
 23 A. Yes.
 24 Q. Yes.
 25 A. And the point is: this had the status of a standard,

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1 whereas guide to good practice doesn't have quite that
 2 same formality.
 3 Q. Yes, I understand.
 4 There was also a standard for walls with ventilated
 5 rainscreens published in July 1998. Are you aware of
 6 that CWCT publication?
 7 A. Yes.
 8 Q. But, again, you would still say this was the most
 9 important one?
 10 A. Yes.
 11 Q. If we go to your report now at page 42 {JOS00000001/42}
 12 where you're dealing with this CWCT systemised building
 13 envelope standard, you tell us at paragraph 10.4.5:
 14 "The overall standard, known for short as 'The CWCT
 15 Standard' was very well known to practitioners in the
 16 cladding industry. In the absence of a BS or EN dealing
 17 with facades as a whole, the CWCT Standard became the
 18 de facto standard for the UK facade industry, which is
 19 evident from the fact that it was often referenced in
 20 specifications. I would expect all cladding contractors
 21 to have been aware of its contents in detail,
 22 particularly those who were members of the CWCT. This
 23 expectation would have included part 6, dealing with
 24 fire performance."
 25 Now, if this was effectively the de facto standard,

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1 can you explain to us how a reasonably competent
 2 cladding contractor would approach this guidance in
 3 comparison with the practical guidance that you get in
 4 ADB? How would the two sit alongside one another, and
 5 what would be the weight given to each by a competent
 6 cladding contractor?
 7 A. It's interesting, because ADB2 is itself a guidance
 8 document, in effect, it's guidance to how the
 9 requirements of the Building Regulations can be met.
 10 Q. Yes.
 11 A. And I think in terms of weight the ADB2 would have been
 12 considered to be the weightier document, that was
 13 something that had to be complied with, I think that's
 14 how it would have been perceived, not least because
 15 that's what the building control officer would have
 16 referred to as the point of reference for compliance.
 17 And although the CWCT standard is more comprehensive by
 18 a long shot, ADB2 would have carried more weight in the
 19 cladding contractor's mind, I think.
 20 Q. Yes, I understand.
 21 Then if we look at 10.4.7, also on page 42, further
 22 down, you explain that there was something called:
 23 "Technical Note 73: 'Fire performance of curtain
 24 walls and rainscreens' was published in March 2011, and
 25 gives an important summary."

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1 So this is as part of a technical note series. You
 2 say:
 3 "I would expect all cladding contractors to have
 4 been aware of its contents, particularly those who were
 5 members of the CWCT."
 6 Then you go on and tell us some particularly
 7 important parts of that, and we'll come back to that,
 8 about insulation material.
 9 So you go on and highlight two particular excerpts
 10 from Technical Note 73 at the top of page 43
 11 {JOS00000001/43}. But to confirm, is it your evidence
 12 that you would expect a cladding contractor to be
 13 familiar with the entire contents of Technical Note 73,
 14 not just these warnings?
 15 A. Yes.
 16 Q. If we turn to that Technical Note 73 from March 2011,
 17 that's at {CWCT0000019}, the front page first. There we
 18 have it. We can see the date in the bottom right—hand
 19 corner, March 2011.
 20 If we could look at page 5 {CWCT0000019/5}, we can
 21 see in the bottom left—hand column of page 5 and over to
 22 the next column a paragraph where it says:
 23 "Cavity barriers may be tested following the
 24 principles of BS 476—20 or BS EN 1366—4. Tests are
 25 generally instructed with the barrier in a cavity

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1 between walls of fire resisting construction and
 2 performance with rainscreen panels may be different."
 3 Do you see that there?
 4 A. Yes.
 5 Q. Now, would you expect the reasonably competent cladding
 6 contractor to have any familiarity with those test
 7 standards that I just read out there? They're at the
 8 bottom of the left—hand column. That was BS 476—20 and
 9 BS EN 1366—4. Those are fire resistance tests. Would
 10 you expect the reasonably competent cladding contractor
 11 to have any familiarity with those fire resistance
 12 tests?
 13 A. No.
 14 Q. No. But just to be clear, that part that I then read
 15 out at the top of the right—hand column, where it says
 16 that tests are generally constructed with the barrier in
 17 a cavity between walls of fire resisting construction
 18 and performance with rainscreen panels may be different,
 19 you would have expected the reasonably competent
 20 cladding contractor to have appreciated that, would you?
 21 A. Yes.
 22 Q. Yes.
 23 A. But that's intuitively obvious, whether or not it's
 24 written here.
 25 Q. I appreciate you say it's intuitively obvious; can you

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1 explain that for us, why you say that?
 2 A. Well, because if they're differentiating between walls
 3 of fire resisting construction —
 4 Q. Yes.
 5 A. — you would expect that behaviour in fire to be
 6 different from that of a rainscreen panel.
 7 Q. Yes. I see.
 8 A. That's all.
 9 Q. Now, going to your conclusions of your report, and
 10 staying with the CWCT standards, this is at page 67
 11 {JOS00000001/67}, and paragraph 20.14. So looking at
 12 20.14, you tell us:
 13 "The [CWCT], based in Bath ... is the main technical
 14 umbrella organisation for facade technology in the UK.
 15 I would expect all cladding contractors to have been
 16 aware of the contents of the 'CWCT Standard for
 17 systemised building envelopes' in detail, and to have
 18 been aware of the subjects covered by the CWCT Technical
 19 Notes, reading specific notes as required."
 20 You go on and say:
 21 "For example Technical Note 73 ..."
 22 So just to be absolutely clear, would it be fair to
 23 say that you would expect all reasonably competent
 24 cladding contractors to have considered both the CWCT
 25 standard for systemised building envelopes and

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1 Technical Note 73 if they were designing an overcladding
 2 of a, say, high-rise building?
 3 A. Yes.
 4 Q. And that would include throughout the period 2012 to
 5 2017; yes?
 6 A. Yes.
 7 Q. Yes.
 8 Can you just confirm to us that these CWCT standards
 9 and the guidance was readily available on the CWCT's
 10 website throughout that time?
 11 A. It was available to members of the CWCT, not to the
 12 general public.
 13 Q. Right.
 14 A. But the technical notes were available free of charge.
 15 Q. Yes.
 16 A. The standard ... I can't remember whether you had to pay
 17 for it or not. I can't remember whether that came with
 18 a charge or not. It was a much more voluminous
 19 document.
 20 Q. But if you were a member, you would easily have access
 21 to it?
 22 A. Yes.
 23 Q. Thank you.
 24 The Building Control Alliance now, the BCA, I want
 25 to ask you now about BCA Technical Guidance Note 18. If

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1 we look at page 44 of your report {JOS00000001/44},
 2 paragraph 10.5.2, you say there:
 3 "In the light of perceived uncertainty about fire
 4 requirements for facades of buildings with a floor above
 5 18m within the facade industry during the period being
 6 assessed, the BCA published the following documents:
 7 " ■ Technical Guidance Note 18, Issue 0, June 2014.
 8 " ■ Technical Guidance Note 18, Issue 1, June 2015."
 9 "These documents are very similar, except that that
 10 in Issue 1 the 18m height is clarified as being to the
 11 highest floor, rather than the height of the building.
 12 Also, in Issue 1, the option of holistic fire
 13 engineering is introduced as a fourth option for showing
 14 compliance with ADB2."
 15 Now, going back to the first line of that paragraph,
 16 where you say that there was a perceived uncertainty
 17 about fire requirements which led to this BCA
 18 publication, can you just help us: what precisely was
 19 the perceived uncertainty that you were referring to
 20 there?
 21 A. Well, I'm referring to the fact that section 12 of ADB2
 22 wasn't particularly clear in what it meant.
 23 Q. Right. And it's your understanding, is it, that it's
 24 that that then led to the BCA entering the field and
 25 giving guidance in this way?

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1 A. Yes. I would also add that I think also there must have
 2 been a — this is to some extent speculation, but there
 3 was probably a bit of a backlash about the industry
 4 thinking: well, do we have to test every façade for
 5 every condition? And the BCA came up with this idea of
 6 a desktop study as a means of getting around the fact
 7 that not every system had to be tested, so that
 8 an intelligent specialised assessor could say: well, the
 9 system you're proposing is sufficiently similar to the
 10 one that's been tested that will allow it to pass
 11 building control. So I think it was probably in
 12 response to that —
 13 Q. Yes, I understand —
 14 A. — push-back from the industry that TGN18 came out.
 15 Q. Were you actually aware yourself at the time of some
 16 push-back within the industry? You began that answer by
 17 saying it's to some extent speculation. Were you aware
 18 that there was some push-back?
 19 A. Yes, I think I was aware at the time, yes.
 20 Q. If we can look at that BCA technical guidance note at
 21 {BCA00000001}, this is the first issue, which is
 22 issue 0, dated June 2014. We can see that from the top
 23 right-hand little box.
 24 We can see under the heading "Purpose", what it
 25 tells us is it says:

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1 "The BCA technical guidance notes are for the
2 benefit of its members and the construction industry, to
3 provide information, promote good practice and encourage
4 consistency of interpretation for the benefit of our
5 clients."

6 So is it right, and was it well understood, that
7 these guidance notes were intended for a broader
8 audience than simply building control officers or
9 members of the BCA?

10 A. Yes.

11 Q. In your experience, would the reasonably competent
12 cladding contractor have been in receipt of updates from
13 the Building Control Alliance, from the BCA?

14 A. Well, yes, as I've said in my report, it's hard to say
15 for sure how they would have received this information.
16 Certainly within the consultancy world, I think we were
17 aware of this. I would imagine that the reasonably
18 competent cladding contractor would have been aware of
19 it because it would have been in their interest to be
20 aware of it. But I can't provide any actual evidence
21 for how they would have been aware of it.

22 Q. Yes.

23 Just to be clear, we don't need to turn it up in
24 your report, but as you have just referred to, at
25 paragraph 10.5.5 on page 44 {JOS00000001/44} you say

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1 you're unclear exactly how cladding contractors would
2 have been alerted to their existence, except by
3 word-of-mouth among peers and through the relevant
4 technical press; yes?

5 A. Yes.

6 Q. Is it possible that one example of the way in which
7 a cladding contractor may have become aware of this
8 guidance is through, for example, updates published by
9 the National House Building Council, the NHBC?

10 A. Yes, if they included this material in that, yes.

11 Q. Yes. Let's look at an example.

12 If we can go to {SIG00000482}, this is an article
13 taken from the web which was published by, we believe,
14 an organisation called Adjacent Government, and we can
15 see under the picture of the tall building it's headed,
16 "Combustible cladding material on residential
17 buildings", dated 9 February 2015, and here it says:

18 "The Building Control Alliance has recently
19 published new guidance in respect of using combustible
20 insulation materials to residential buildings over 18m
21 in height. Steve Evans at NHBC outlines what this
22 means ..."

23 You can see if you go over to the second page
24 {SIG00000482/2} that it's got his name at the bottom,
25 Steve Evans, senior area technical manager for the NHBC.

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1 So this is an article that he has written and it's found
2 its way on to this website.

3 Is this the kind of update or article in the
4 relevant technical press that you might expect
5 a reasonably competent cladding contractor to receive
6 which would draw their attention to the BCA guidance?

7 A. Yes.

8 Q. Yes.

9 You tell us at paragraph 20.15 of your report on
10 page 67 {JOS00000001/67} — we don't need to turn it
11 up — that:

12 "In my opinion a reasonably competent cladding
13 contractor working on tall buildings would have been
14 aware of this through conversations with peers, or
15 communications from the CWCT, and would have read it."

16 Now, we've seen in your report that you're unclear
17 as to exactly how contractors would have been alerted to
18 the existence of it. But considering that, can you just
19 help us on what basis you formed the view that
20 a reasonably competent cladding contractor would have
21 been aware of its existence and would have read it?

22 A. To some extent it's a sort of deduction from the fact
23 that the concept of a desktop study was well known at
24 the time and this TGN18 is the document that introduces
25 that concept.

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1 Q. Yes.

2 A. So one would assume that therefore people who talked
3 about desktop studies, including cladding contractors,
4 must be aware of TGN18.

5 Q. Yes. Yes, I understand, thank you.

6 A. That's it, really.

7 Q. Yes.

8 Now, finally I want to ask you about the LABC, Local
9 Authority Building Control, another organisation, and
10 you refer on page 45 of your report {JOS00000001/45}, if
11 we could go to that now, at paragraph 10.7.1 to
12 something called the LABC warranty technical manual, and
13 you tell us that at clause 7.7.2, there is a requirement
14 there that curtain walling systems should have
15 third-party certification confirming satisfactory
16 assessment in accordance with the CWCT standard for
17 curtain walling. Then it says:

18 "The CWCT Standard provides detailed guidance on
19 performance and testing."

20 You go on to tell us at the top of the following
21 page that although this clause uses the phrase "curtain
22 walling systems", in the context it's used you would
23 understand this to apply to cladding as well. Is that
24 correct?

25 A. Yes.

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1 Q. Now, we just wanted to take you to somewhere in that
2 LABC warranty technical manual where a similar statement
3 is in fact made about cladding.
4 If we could turn to that LABC document, that's at
5 {LABC0007892/197}. So this is slightly further on, we
6 can see this is chapter 7, and we can see at the top
7 this is from the LABC warranty technical manual.
8 On the right—hand side, there is a section headed
9 "7.7.5 Rainscreen cladding systems". Do you have that?
10 A. Yes.
11 Q. There is some text there, and if we turn over to
12 page 198 {LABC0007892/198}, still in the same section,
13 it says right in the top left—hand corner:
14 "Rainscreen systems should have third—party
15 certification confirming satisfactory assessment and
16 comply with the requirements of the CWCT Standard for
17 Systemised Building Envelopes. The collation of
18 individual testing of components does not provide
19 an overall performance of the rainscreen ... or backing
20 wall."
21 Do you see that there?
22 A. Yes.
23 Q. So can we agree that even if the curtain walling section
24 of the LABC warranty technical manual did not apply to
25 the cladding or rainscreen cladding, this section

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1 incorporates the same requirement, including to comply
2 with the CWCT standard for systemised building
3 envelopes?
4 A. Yes.
5 Q. Yes. And also to have third—party certification; yes?
6 A. Yes.
7 Q. Now, just stepping back and thinking about industry
8 guidance documents and standards more generally, would
9 you agree that guidance documents and indeed more formal
10 standards can quickly go out of date once they are
11 published?
12 A. Yes.
13 Q. Do you consider that the reasonably competent cladding
14 contractor has an obligation to interrogate and question
15 guidance and standards?
16 A. I think it would depend on the date. If you were in
17 2013, for example, and you were looking at a standard
18 dated 2010, you wouldn't have any particular reason to
19 question it. If you were looking at one dated 1980, you
20 would be foolish not to question it.
21 Q. Yes.
22 A. So ...
23 Q. Do you consider that the reasonably competent cladding
24 contractor ought to be able to identify where it was
25 clear that particular guidance had become out of date,

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1 compared with other industry guidance?
2 A. Sorry, I missed the first part of your question.
3 Q. Yes. Do you consider that the reasonably competent
4 cladding contractor ought to be able to identify where
5 it was clear that particular guidance had become out of
6 date compared with other industry guidance?
7 (Pause)
8 A. It's tricky to answer that.
9 Q. Yes, I do understand that, it's a very hypothetical
10 question.
11 A. Yes.
12 SIR MARTIN MOORE—BICK: Isn't the problem that it's a matter
13 of judgement?
14 A. Yes.
15 SIR MARTIN MOORE—BICK: And as time passes, I think in the
16 light of what you said earlier, it will become more
17 apparent that an old standard needs to be questioned.
18 A. Yes.
19 MS GRANGE: Yes.
20 SIR MARTIN MOORE—BICK: At what point you could say everyone
21 should have questioned it is probably debatable, isn't
22 it?
23 A. Yes, and it depends on the particular technical issue
24 involved, I would say. Like most things, it depends on
25 context. I can't make a general answer to the question.

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1 MS GRANGE: No, I understand. I'm going to move on.
2 I want to ask you some questions now about the
3 industry's knowledge of the fire performance of
4 particular products and of fires more generally
5 involving cladding.
6 If we can go to page 34 of your report
7 {JOS00000001/34} first, and look at paragraph 8.2.1,
8 this is under the section, "State of knowledge within
9 the cladding industry", you have set out there helpfully
10 for us a table of three different types of insulation
11 board: extruded polystyrene, XPS; polyisocyanurate, PIR,
12 foam; and phenolic foam.
13 Below that, at 8.2.2, you say this:
14 "All of these products are combustible to a greater
15 or lesser degree. While fire specialists would probably
16 have been able to rank these in terms of fire
17 propagation and smoke generation, in my experience the
18 reasonably competent cladding contractor would have
19 known that they were combustible but would not have been
20 able to rank their combustibility."
21 So that's what you tell us there.
22 So just to be clear, when you talk about a fire
23 specialist being able to rank the products, do you mean
24 that they would be able to examine the test data and
25 classifications for each product and determine an order,

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1 say, of combustibility —
 2 A. Yes.
 3 Q. — or an order of smoke production?
 4 A. Yes.
 5 Q. Yes. And you've told us very clearly there that the
 6 reasonably competent cladding contractor would have
 7 known that these insulation products were combustible
 8 but would not have been able to rank them.
 9 Would it follow from that that the reasonably
 10 competent cladding contractor should have understood
 11 that the use of such combustible materials on a building
 12 over 18 metres in height entailed a fire risk?
 13 A. Yes.
 14 Q. Now, in terms of the knowledge within the industry of
 15 cladding fires, if we could turn to page 35 of your
 16 report {JOS00000001/35}, here you've set out very
 17 helpfully again a table of what you describe in
 18 paragraph 9.1 as "a number of important fires involving
 19 external fire spread", and you've given us the date, the
 20 location and notes about what was known about those
 21 fires. That table goes from page 35 over, if we could
 22 just have a look, on to page 36. So it takes us right
 23 up through to June 2016.
 24 Going back to page 35, the first fire in which you
 25 specifically refer to ACM is the China fire from

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1 February 2011, it's four lines up, at the
 2 Wanxin Complex, and the details you have given under the
 3 notes column, it says:
 4 "ACM panels involved, and both extruded and expanded
 5 polystyrene insulation."
 6 Now, would it be fair to say, therefore, that prior
 7 to 2012 the fire risks posed by ACM panels were not
 8 well known within the industry?
 9 A. Yes, and particularly this fire in China would not have
 10 been publicised particularly. I think when these
 11 problems became known was once the fires started
 12 happening in the Middle East —
 13 Q. Yes.
 14 A. — which, as you say, is about 2012.
 15 Q. Yes, so we can see immediately below that, April 2012,
 16 the Al Tayer Tower in Sharjah in the UAE:
 17 "Fire started on 8th floor of 40 storeys, ACM
 18 panels."
 19 And then we've got the Roubaix, France fire, the
 20 Mermoz Tower, May 2012:
 21 "Fire broke out on 2nd storey of 18 storeys. One
 22 died. ACM cladding."
 23 So I think what you're telling us is that is really
 24 at the time when this was becoming much more well known;
 25 is that correct?

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1 A. Yes.
 2 Q. If we look at paragraph 9.2 of your report on page 36
 3 {JOS00000001/36}, you say there:
 4 "I have listed the above, but I would not expect all
 5 practitioners in the cladding industry to have been
 6 aware of all of these at the time. Nevertheless, the
 7 ones that would, in my opinion, have been more widely
 8 known were the fires in the United Arab Emirates (UAE),
 9 particularly in Dubai in 2012–2016, because they were
 10 well covered in the news media and technical press at
 11 the time."
 12 Then you go on to tell us at 9.3:
 13 "For example, the UAE fires were well covered by the
 14 local and international online media. They were also
 15 reported online on bbc.com, and on itv.com, and within
 16 the technical online feeds, such as
 17 architectsjournal.com, building.com and
 18 constructionweek.com. Although I cannot provide
 19 specific contemporaneous evidence, it is in my opinion
 20 highly likely that news of these fires would also have
 21 been covered by the relevant broadcast TV news
 22 programmes and in the print editions of the above
 23 magazines. Finally, I would expect local agents dealing
 24 with importation of cladding and insulation materials to
 25 the UAE to have been aware of these fires from their

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1 local media, and to have informed their relevant
 2 suppliers accordingly."
 3 Now, just going back to 9.2 and where you tell us
 4 that you would have expected the reasonably competent
 5 cladding contractor to have been aware of some of the
 6 fires in this table, is it only the UAE fires that you
 7 would have expected them to be aware of, or would you
 8 have expected them to be aware of at least some of the
 9 others as well?
 10 A. I would have expected them to have been aware of the UAE
 11 fires. They might have been aware of some of the
 12 others, but I wouldn't have expected that.
 13 Q. Yes.
 14 Now, it's been suggested to the Inquiry that
 15 cladding assemblies in the UAE may have been different
 16 to the type of cladding assemblies typically used in the
 17 UK. Is that something that you're aware of or you can
 18 help us with?
 19 A. You're saying in some of the other evidence, or ...?
 20 Q. No, this has actually been suggested in some questions
 21 for you, that for example in the UAE typically cladding
 22 assemblies did not have insulation and those that did
 23 had a thin layer of glass wool or stone wool. Can you
 24 help us with that?
 25 A. No, I can't, I'm afraid.

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1 Q. No, fair enough.
 2 A. But I'm slightly surprised at that, because although
 3 obviously it's a different climate, the insulation
 4 requirements are still there because you're trying to
 5 keep the cool of the building in.
 6 Q. Yes, yes, yes.
 7 A. You know, because they are heavily air conditioned. But
 8 I'm not sure what the point being made is about the fact
 9 that the cladding construction is different, why ...
 10 Q. I think someone is suggesting that maybe because the
 11 cladding construction was different that perhaps people
 12 wouldn't have been paying as much attention in the UK to
 13 those fires.
 14 A. Well, I ... you haven't asked the question, but if
 15 you're asking: why do I think people weren't paying
 16 enough attention? Can I ...
 17 Q. I'm coming to that —
 18 A. Oh, okay, because I've got a view on that.
 19 Q. Yes.
 20 A. But I don't think the difference of construction was the
 21 issue.
 22 Q. Right.
 23 A. No.
 24 Q. Yes.
 25 Just sticking with this for a moment, it's also been

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1 suggested that none of those UAE fires involved cladding
 2 systems which attempted to compartmentalise the cladding
 3 system, for example through the use of cavity barriers.
 4 Again, can you help us whether that's correct or not?
 5 A. I don't know. I don't know.
 6 Q. Does it remain your evidence, as stated at paragraph 9.4
 7 on page 37 {JOS00000001/37} — if we can just look at
 8 9.4, you say:
 9 "The UAE fires were reported at the time as being
 10 specifically exacerbated by the ACM cladding. One
 11 relevant article among many is in Building magazine.
 12 Those involved in the cladding industry would, or at
 13 least should, have been aware of the dangers inherent in
 14 using this type of cladding on tall buildings."
 15 A. Yes.
 16 Q. So does it remain your evidence, notwithstanding whether
 17 there were any differences in the detail of those
 18 cladding systems, that the reasonably competent cladding
 19 contractor ought to have been aware of the fire dangers
 20 inherent in using ACM cladding?
 21 A. Yes.
 22 Q. Would those dangers have included the knowledge that
 23 metal cladding has a propensity to melt and deform,
 24 thereby exposing the core of any composite panel?
 25 A. I would say probably, but I wouldn't be able to say

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1 categorically.
 2 Q. Yes.
 3 Would an awareness of the dangers have included the
 4 knowledge that cavity barriers might well be futile
 5 because the cladding panel can deflect and deform and
 6 warp under heating, meaning there would be nothing for
 7 the cavity barrier to abut against? Do you consider
 8 that that would have been understood?
 9 A. No, I'm not sure where that's coming from, because,
 10 I mean, there are things called intumescent
 11 cavity barriers which expand when they're heated, so
 12 they wouldn't necessarily have the effect that you're
 13 describing.
 14 Q. Yes. I think it's being suggested that even with
 15 intumescent cavity barriers, it would be known that they
 16 may well be futile because, even with an intumescent
 17 strip, the cladding panel can still deflect and deform
 18 and warp, allowing the flame to bypass the barrier.
 19 A. Yes, after a certain time.
 20 Q. Yes.
 21 A. Because, you know, the cavity barriers are only
 22 typically designed for 30 minutes' operation, so after
 23 that time there would be distortion, yes.
 24 Q. What about before that time, what about in that
 25 30 minutes? Would there have been an appreciation that

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1 with ACM cladding materials, they may render
 2 cavity barriers ineffective even before that time
 3 because they're not a solid surface and they may warp
 4 and deflect under heating?
 5 A. Are you asking, I'm sorry, could that happen from
 6 a technical point of view?
 7 Q. No, I'm asking whether you think that those dangers
 8 would have been understood at the time by cladding
 9 contractors?
 10 A. Yes, I think it's something that they would have thought
 11 about.
 12 Q. Yes.
 13 A. But they wouldn't have thought necessarily, "Therefore
 14 we can't do this" on that account alone.
 15 Q. Right, I understand.
 16 Can I show you one email at this point which is
 17 specific to the Grenfell project. If we can go to
 18 {HAR00006585}. I want to focus on the top email.
 19 So, for context, this is an email from
 20 Daniel Anketell—Jones who was the design manager at
 21 Harley Façades. It's dated 27 March 2015, and this
 22 arose in the context of a discussion about the
 23 appropriate resistance for the cavity barriers in the
 24 façade at Grenfell Tower. There was a debate going on
 25 as to what rating the cavity barriers needed to have,

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1 whether 30 minutes or a greater fire resistance .
 2 We can see that Mr Anketell—Jones gives a view on
 3 this point about fire barriers and their rating, and he
 4 says there:
 5 "Just that it's ridiculous .
 6 "There is no point in ' fire stopping', as we all
 7 know; the ACM will be gone rather quickly in a fire!
 8 "The whole point is to stop 'unseen' fire spreading
 9 in the cavity and moving to other parts of the
 10 building."
 11 Then he goes on, and we don't need to look at those
 12 parts.
 13 So he's saying there that:
 14 "There is no point in ' fire stopping', as we all
 15 know; the ACM will be gone rather quickly in a fire!
 16 "The whole point is to stop 'unseen' fire spreading
 17 in the cavity and moving to other parts of the
 18 building."
 19 Now, in his oral evidence, when he was asked about
 20 this email, Mr Anketell—Jones said that he was referring
 21 to the fact that aluminium will melt quickly in a fire
 22 and that that is a fact known throughout the industry:
 23 that in a fire , an aluminium façade will not last very
 24 long; it will melt and fall off the building.
 25 Now, would you agree with that, that it was

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1 well known in the industry that the aluminium façade
 2 will not last very long, it will melt and fall off the
 3 building?
 4 A. Are we talking about an ACM here?
 5 Q. Yes.
 6 A. Yes. Yes, I would say that was pretty well known, yes.
 7 Q. So those physical properties of aluminium would be
 8 well known throughout the cladding industry; yes?
 9 A. Yes.
 10 Q. Do you consider that —
 11 A. Sorry, just to be clear.
 12 Q. Yes.
 13 A. We're not talking here about a normal aluminium panel on
 14 its own, we're talking about aluminium as part of
 15 a composite?
 16 Q. Yes.
 17 A. Yes.
 18 Q. Do you consider that the reasonably competent cladding
 19 contractor ought also to have known at this time that
 20 ACM would be gone rather quickly in a fire because it
 21 contained a combustible PE core?
 22 A. Yes.
 23 Q. Thank you.
 24 Now, finally on the topic of the UAE fires, can
 25 I just show you another email, this is at {CEP00049719}.

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1 This is an email from Deborah French of Alcoa, better
 2 known as Arconic, to a number of individuals within CEP,
 3 who were the fabricator of the panels at Grenfell Tower.
 4 The subject is "BBC Report Ref ACM in UAE". So this is
 5 consistent with you saying that the UAE fires were well
 6 reported, for example by the BBC. Yes?
 7 Just reading her email, she says:
 8 "Hi
 9 "As you may be aware there had been some reports via
 10 BBC concerning a fire on a building in UAE regarding
 11 ACM.
 12 "As a business we are aware of this report and our
 13 technical team are following the details , but in the
 14 meantime I wanted to add some thoughts that may help if
 15 you get questions from your customers/clients etc.
 16 "Regarding the supply of Reynobond in the UK, as you
 17 know we supply both PE [polyethylene] and FR
 18 [fire —resisting] core and can control and understand
 19 what core is being used in all projects due to the
 20 controlled supply route we have. By only supplying
 21 Reynobond to a very small group of Approved Fabricators
 22 and working very closely with them on all projects we
 23 are able to follow what type of project is being
 24 designed/developed and then offer the right Reynobond
 25 specification including the core.

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1 "At this stage we will continue to offer both PE &
 2 FR core and continue the close working relationship we
 3 have with our Approved Fabricators to make sure the
 4 right technical support, Reynobond Specification and
 5 Materials are being used and installed on Reynobond
 6 Projects.
 7 "Many thanks for making me aware of the reports and
 8 for your continued support."
 9 Now, would it be fair to say that this email
 10 reflects what you have termed to be a growing awareness
 11 in the industry regarding the fire risks posed by ACM
 12 cladding with a PE core?
 13 A. Yes, and I think it also goes beyond that growing
 14 awareness. It's a sort of — it's written as a response
 15 to a potential problem I believe this manufacturer must
 16 have seen, and trying to reassure their clients .
 17 Q. Yes.
 18 A. Yes.
 19 Q. Now, this email was sent to a fabricator . What would
 20 you have expected a fabricator to do upon receipt of
 21 information like this at the time about the fire risks
 22 posed by ACM PE?
 23 A. It's a rather confusingly worded email, I think, but
 24 what the fabricator would have got from it, I think,
 25 would be to question perhaps, "Should we be using a PE

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1 or an FR core?", perhaps. Knowing that the FR
 2 alternative was available, I think someone should have
 3 said, "Well, perhaps an FR core would be more
 4 appropriate for our project" or something.
 5 Q. Would you have expected that sort of email to be sent to
 6 cladding contractors to whom ACM PE was being supplied,
 7 either currently or thereafter?
 8 A. Yes.
 9 Q. If the reasonably competent cladding contractor had
 10 become aware of an email like this, would you have
 11 expected that to provoke any action within that cladding
 12 contractor if they were either currently using or
 13 proposing to use ACM PE?
 14 A. Yes.
 15 Q. What would you have expected them to have done?
 16 A. I think they should have — they would have gone back to
 17 the manufacturer or their supplier and just examined the
 18 issues involved a little bit more and to say, "Are you
 19 sure we're okay using this kind of PE system when an FR
 20 system might be a better bet?"
 21 Q. You tell us on this theme, if we go to page 37 of your
 22 report {JOS00000001/37}, paragraph 9.5:
 23 "As a general observation I would expect the
 24 manufacturers of relevant materials (cladding and
 25 insulation) to have been aware of these fires, and their

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1 implications, to a greater degree than cladding
 2 contractors. I would expect such manufacturers to draw
 3 to the attention of their customers the relevant risks."
 4 A. Yes.
 5 Q. Just to be clear, again, do you draw any distinction
 6 there, based on the fires that you've seen and what was
 7 in the technical press, about what you would have
 8 expected of a cladding manufacturer as compared to
 9 an insulation manufacturer in terms of what should have
 10 been done about and notice taken of these fires?
 11 A. Well, it's interesting, I think both the insulation
 12 manufacturer and the cladding manufacturer should have
 13 been aware, because some of these fires were the result
 14 of insulation burning and some due to the cladding
 15 burning and some were the result of both.
 16 Q. Yes.
 17 A. But that said, I think the perception in the industry
 18 that I recall at that time was that it was the cladding,
 19 the ACM cladding, that was perceived to be the bigger
 20 problem.
 21 Q. Yes.
 22 As you say at paragraph 9.4, you've said that:
 23 "The UAE fires were reported at the time as being
 24 specifically exacerbated by the ACM cladding."
 25 Yes?

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1 A. Yes.
 2 Q. Would you expect manufacturers of ACM cladding to do
 3 anything further than simply draw their customers'
 4 attention to the relevant risks? Would you have
 5 expected them to have gone any further than just drawing
 6 attention to the risks, or to take more serious steps?
 7 A. I would expect them to have taken more serious steps and
 8 said, "Look, we are concerned about the use of PE-cored
 9 materials for tall buildings and we would recommend that
 10 you start using the FR-cored materials", for example.
 11 Q. Yes.
 12 A. But, I mean, again, I'm conscious of some of the
 13 evidence in the Inquiry, and that gives me stronger
 14 benefit of hindsight, if you like.
 15 Q. Yes.
 16 A. But at the time, yes, I think it would be reasonable
 17 that the manufacturers would have taken a more proactive
 18 approach to ensuring that their products were being used
 19 safely.
 20 Q. Yes, yes, I understand.
 21 To your knowledge, did any authoritative body
 22 concerned with cladding or the construction industry —
 23 for example the CWCT, the NHBC, the BCA — publish any
 24 cautionary guidance or recommendations specifically
 25 following these fires?

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1 A. I think the TGN18 coming from the BCA, looking at the
 2 dates of 2014 and 2015, seemed to correspond to the
 3 growing awareness due to these fires, and it may be that
 4 that was one of the reasons why they felt that the whole
 5 question needed clarification —
 6 Q. Yes.
 7 A. — apart from the other questions we discussed earlier.
 8 So that may have been related to it. But I can't recall
 9 anything specific following these fires —
 10 Q. Yes.
 11 A. — specifically addressing these fires and thinking:
 12 what should we do about them, about this problem?
 13 Q. Yes.
 14 A. Yes, I have —
 15 Q. Yes.
 16 A. And I think, if I could give a view here, one of the
 17 problems was that, as far as I understand it, there was
 18 not great loss of life in these fires. They were
 19 serious fires, very serious fires, but there wasn't
 20 great loss of life, and perhaps, therefore, people
 21 didn't take them seriously enough. It was a failure of
 22 imagination.
 23 Q. Right, yes. My next question was: do you consider that
 24 the lessons of these fires were properly learned by the
 25 UK construction and cladding industry before the

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1 Grenfell Tower fire?
 2 A. No.
 3 Q. No. And the reason for that, you think, may emanate
 4 from the fact there just wasn't a significant loss of
 5 life —
 6 A. Yes.
 7 Q. — so it didn't jump to people's attention; is that what
 8 you're saying?
 9 A. Yes, that's exactly what I'm saying.
 10 Q. Yes.
 11 A. And as I'm saying it, there was a bit of this attitude
 12 of: well, it hasn't happened so it can't happen.
 13 Q. Yes, thank you.
 14 Given that at the time of the Grenfell Tower fire
 15 there were a large number of other high-rise residential
 16 buildings across the UK that were clad in PE-cored ACM,
 17 do you think that tells us anything about whether the
 18 dangers associated with the use of such products were
 19 well understood in the cladding industry?
 20 A. I don't think they were sufficiently well understood,
 21 no.
 22 Q. What comfort, if any, would the reasonably competent
 23 cladding contractor take from the fact that some of the
 24 products used on the Grenfell Tower façade had been in
 25 use for many years?

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1 A. I'm not sure what — the way you phrased that question,
 2 I'm not sure how to answer it.
 3 Q. Yes. I mean, I guess what I was saying is, if you try
 4 and put yourself in the mindset of the reasonably
 5 competent cladding contractor, let's take the ACM PE, in
 6 2014, deciding whether to use it: what comfort would you
 7 expect them to take from the fact that ACM PE had been
 8 used for many years on similar buildings? What weight
 9 would you give to that?
 10 A. I think quite a lot of weight, in the sense that the
 11 construction industry, or some parts of the construction
 12 industry, has a sort of — sometimes, I think, a rather
 13 head-in-the-sand view, which is that if it's been
 14 all right for 20 years, it will be all right tomorrow,
 15 you know, and, as I said, it's a failure of imagination
 16 sometimes.
 17 Q. Yes.
 18 A. So I think they probably did take comfort from the fact
 19 that there hadn't been a major disaster, so there was
 20 a sort of complacency.
 21 Q. Yes. But sitting here now, do you consider it was
 22 reasonable for them to have taken that comfort at the
 23 time?
 24 A. No.
 25 Q. What about any comfort taken from the fact that

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1 products — let's take the ACM PE — had been used on
 2 many buildings? So not just for many years, but there
 3 were many other buildings with it on.
 4 A. Yes.
 5 Q. Again, was that reasonable, to take comfort from that?
 6 (Pause)
 7 A. No, I don't think it was reasonable.
 8 Q. Yes.
 9 On a similar theme, what comfort would the
 10 reasonably competent cladding contractor take from the
 11 fact that the products were manufactured by well known
 12 and ostensibly reputable companies?
 13 A. Well, yes, they would have taken comfort from that.
 14 Q. Yes, and reasonably so, in your view?
 15 (Pause)
 16 A. I find that hard to answer.
 17 Q. Yes, okay.
 18 In your view, do these considerations in any way
 19 lessen the need for the reasonably competent cladding
 20 contractor to conduct rigorous and exhaustive compliance
 21 checks each time they use the products? Is that what
 22 you would expect of the reasonably competent cladding
 23 contractor?
 24 A. Yes.
 25 Q. Now, you've also helpfully referred us, if we go to

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1 page 32 of your report {JOS00000001/32}, at
 2 paragraph 7.6.2.1, to the fact that there was the first
 3 International Seminar for Fire Safety of Façades held in
 4 Paris in November 2013. You've got that right at the
 5 top there, referring to that seminar. You say that this
 6 was significant, that this conference was held that
 7 year, as it reflects a growing awareness of the
 8 fire safety of façades at that time, possibly as
 9 a result of the fires in France in 2010 and 2012, and
 10 the spate of fires in the UAE in 2012.
 11 Now, given that Harley's involvement in the
 12 Grenfell Tower refurbishment began in 2013, would it be
 13 fair to say that that occurred on the cusp of that
 14 increase in awareness of the fire safety of façades
 15 within the industry?
 16 A. Yes, although I wouldn't have expected Harley to be
 17 specifically aware of this seminar.
 18 Q. No, I understand that.
 19 Given your view that the level of technical
 20 expertise of UK-based cladding contractors might have
 21 been slightly less than that of their international
 22 counterparts, would it be fair to say that the increase
 23 in the awareness of the fire safety of façades that you
 24 refer to was more widespread amongst top tier
 25 international contractors than amongst UK-based

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1 contractors, certainly in those early years, 2012/2013?
 2 A. Probably true, yes.
 3 Q. Right. Yes. And does it follow that it might have
 4 taken a little bit longer for that awareness to have
 5 filtered down to the UK cladding contractors that you
 6 have referred to?
 7 A. Yes, except I don't think they were unaware.
 8 Q. No.
 9 A. I'm not saying that the UK cladding industry was
 10 unaware. I think they probably were aware of the
 11 issues.
 12 Q. Yes. Yes, thank you.
 13 A. Yes.
 14 Q. Now, you've referred to one particular paper of
 15 relevance that appears to have been delivered at this
 16 conference. If we could go to 7.6.2.3, you say there:
 17 "One paper of particular relevance was 'Fire hazards
 18 of exterior wall assemblies containing combustible
 19 components', by White [and others] ..."
 20 Let's just turn to that paper. It's at
 21 {IMA00000930}.
 22 Just to be clear, this is the final version of the
 23 paper from June 2014, whereas the conference was in
 24 November 2013, and it's clear that there was
 25 a presentation by these authors with this title at that

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1 conference. I think what we can't be 100% clear about
 2 is whether this entire paper was presented then or
 3 whether this is the final version.
 4 If we just look at page 3 of this paper
 5 {IMA00000930/3}, we can see that it was drawing
 6 attention in the last few lines of the foreword in that
 7 first paragraph, if we look at the last four lines, it
 8 states there:
 9 "There have been a number of documented fire
 10 incidents involving combustible exterior walls but
 11 a better understanding was needed of the specific
 12 scenarios leading to these incidents to inform current
 13 test methods and potential mitigating strategies."
 14 What this paper does is it examines those documented
 15 fire incidents and what they were aware of from those,
 16 and then goes on and does an analysis of current test
 17 methods in the latter part of the paper; yes?
 18 If we go within this paper to where we've got this
 19 spate of recent fires in the UAE and look at page 46
 20 {IMA00000930/46}, here we can see we've got reference to
 21 the Al Tayer Tower in Sharjah, 2012, and we can see,
 22 reading two lines down in the text:
 23 "The exterior of the building was clad with metal
 24 composite panels consisting of aluminium with
 25 a polyethylene core."

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1 Yes?
 2 A. Yes.
 3 Q. So we can see you don't just learn that it's ACM, but
 4 also it's ACM PE.
 5 A. Yes.
 6 Q. Then the same is true if you go over to page 47
 7 {IMA00000930/47}. This is dealing with a different fire
 8 in Dubai in 2012, and again, if you look at the second
 9 line down:
 10 "The building was clad with metal composite panels
 11 consisting of aluminium with a polyethylene core."
 12 Then the same at page 48 {IMA00000930/48}, again
 13 looking at this same spate of fires, you can see the
 14 Tamweel Tower Dubai, 2012, and it says, picking it up at
 15 the end of the first line:
 16 "The building was clad with metal composite panels
 17 consisting of aluminium with a polyethylene core."
 18 So this paper in late 2013/2014 was clearly drawing
 19 attention to the use of ACM with polyethylene cores;
 20 that's right, isn't it?
 21 A. Absolutely.
 22 Q. In terms of who attended this November 2013 Paris
 23 conference at which this paper was presented, if we go
 24 back to your report, you tell us at page 33
 25 {JOS00000001/33}, paragraph 7.6.2.8, you say there that

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1 you:
 2 "... have not been able to obtain the specific
 3 attendance lists for these seminars, but the Research
 4 Institute of Sweden has provided a contact list in
 5 connection with [these] seminars, and the attendees were
 6 apparently drawn from this list. The list contains
 7 a wide range of international organisations, including
 8 quasi-government bodies, universities and test houses,
 9 manufacturers and consultants. There do not appear to
 10 be any main contractors or cladding contractors on the
 11 contact list which indicates to me that contractors
 12 generally would have relied on manufacturers to be
 13 involved in such seminars and to have fed back
 14 information as necessary."
 15 So you've told us that about the attendance at this
 16 cladding conference, and I think we do see individuals
 17 from Kingspan, do we not, on that attendance list?
 18 A. Yes, if you say so.
 19 Q. Yes, you can take it from me that there's individuals
 20 from Kingspan who attended, consistent with what you
 21 have said there about it comprising of people including
 22 manufacturers and consultants.
 23 Then you tell us, if we go to page 34
 24 {JOS00000001/34}, the next page, at 8.1.1:
 25 "The combustibility of these panels was, in my

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1 opinion, well known in the industry, particularly since
 2 the UAE fires in 2012 to 2016.”
 3 A. Yes.
 4 Q. Just to be clear, is it your evidence that regardless of
 5 the fact that main contractors and cladding contractors
 6 did not attend this particular conference, the
 7 information disseminated at this conference and similar
 8 industry events would have meant that there was
 9 a filtering down in the industry of an awareness of
 10 these risks from using ACM cladding?
 11 A. Absolutely, yes. And I think the important point is
 12 that these conferences took place at all. I mean, these
 13 are not just fire conferences or cladding conferences;
 14 these are specific conferences about fire risk in
 15 cladding.
 16 Q. Yes.
 17 A. Whether or not people attended, the fact that people
 18 thought it was a big enough problem to have a major
 19 international conference in 2013 and again in 2016.
 20 Q. Yes. Yes, thank you.
 21 Now, taking into account your evidence that the
 22 combustibility of ACM panels was well known in the
 23 industry, do you agree that the reasonably competent
 24 cladding contractor would have been aware not only of
 25 the occurrence of the UAE cladding fires in 2012/2013,

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1 but also the causes of those fires?
 2 A. Yes.
 3 Q. Yes, so including the fact that they involved ACM PE?
 4 A. Yes. Just to be clear, cause — the ACM panel didn't
 5 cause the fire, it propagated it, if that makes sense.
 6 Q. I see. Would they have been aware that the ACM PE
 7 propagated the fire?
 8 A. Yes.
 9 Q. Yes.
 10 So just to be clear, the reasonably competent
 11 cladding contractor would have been aware that ACM
 12 panels with a polyethylene as opposed to an FR core had
 13 been involved in a number of these fire incidents on
 14 high-rise buildings?
 15 A. Yes.
 16 MS GRANGE: Yes, thank you.
 17 Mr Chairman, that's a good moment, and it's the
 18 lunch break in any event.
 19 SIR MARTIN MOORE—BICK: I think it's time we had a break,
 20 then.
 21 MS GRANGE: Yes, I'm going to move to a different topic now.
 22 SIR MARTIN MOORE—BICK: Well, Mr Sakula, it's time we all
 23 had a break for some lunch. So we will do that now.
 24 We'll come back at 2 o'clock, please.
 25 Again, please don't discuss your evidence with

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1 anyone outside the room. Thank you very much.
 2 THE WITNESS: Okay, thank you.
 3 (Pause)
 4 SIR MARTIN MOORE—BICK: Right, 2 o'clock, then, please.
 5 Thank you.
 6 (1.02 pm)
 7 (The short adjournment)
 8 (2.00 pm)
 9 SIR MARTIN MOORE—BICK: Right, Mr Sakula, ready to carry on?
 10 THE WITNESS: Yes, thanks.
 11 SIR MARTIN MOORE—BICK: Thank you very much.
 12 Yes, Ms Grange.
 13 MS GRANGE: Thank you.
 14 Yes, good afternoon, Mr Sakula.
 15 I just want to return to one passage in the
 16 transcript this morning, just to check one of your
 17 answers. If we can go to page 111, lines 18 to 23
 18 {Day125/111:18–23}, I was asking you a series of
 19 questions about whether a cladding contractor would take
 20 comfort from the fact that they'd used a material like
 21 ACM for many years on many buildings, and that those
 22 materials were manufactured by ostensibly reputable
 23 companies.
 24 If we look at 18 to 23, I said:
 25 "Question: In your view, do these considerations in

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1 any way lessen the need for the reasonably competent
 2 cladding contractor to conduct rigorous and exhaustive
 3 compliance checks each time they use the products? Is
 4 that what you would expect of the reasonably competent
 5 cladding contractor?
 6 "Answer: Yes."
 7 I just want to be clear on your answer. Are you
 8 answering "yes" because you're answering — it's my
 9 fault for the poor way I've put the question — that you
 10 would expect the reasonably competent cladding
 11 contractor to conduct rigorous and exhaustive compliance
 12 checks each time they used the product; is that right?
 13 A. Could I just read this again?
 14 Q. Yes, of course, I'm so sorry.
 15 A. Re-read this, I just want to ...
 16 (Pause)
 17 Yes, I'm saying "yes" to the question, "Would those
 18 considerations lessen the need for them to conduct
 19 rigorous and exhaustive compliance checks?"
 20 Q. So you think that you wouldn't need to conduct such
 21 rigorous and exhaustive checks if you've used the
 22 products for many years on many buildings; is that what
 23 you're saying?
 24 A. No, I don't think I'm saying that.
 25 Q. Yes, because I thought you were saying the opposite of

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1 that, that you would still need to conduct rigorous
 2 checks and compliance checks even if you've used the
 3 materials —
 4 A. That's what I intended to say.
 5 Q. Great, yes.
 6 A. Yes, that each case has to be looked at on its merits.
 7 MS GRANGE: Yes, thank you.
 8 SIR MARTIN MOORE—BICK: So really I think you're saying
 9 previous experience cannot be relied on for future
 10 purposes?
 11 A. Yes, because every building is different.
 12 SIR MARTIN MOORE—BICK: Yes, thank you.
 13 MS GRANGE: That's helpful. Sorry, we just had a request to
 14 clarify that on the transcript.
 15 A. All right.
 16 Q. Moving to a short topic now, the means of disseminating
 17 knowledge within the cladding industry.
 18 If we can look at paragraph 7.2.1 on page 29 of your
 19 report {JOS00000001/29}, you tell us there that:
 20 "Most companies in the construction industry
 21 subscribe to some sort of library service, whereby they
 22 have online access to codes, standards and other
 23 technical information. Such services would require at
 24 least one named individual within the company who would
 25 be the main correspondent. The service would usually

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1 provide regular notifications when new documents are
 2 published. On receipt of such a notification the
 3 correspondent would be expected to inform those within
 4 their organisation who would need to know about the new
 5 publication or update to an existing publication."
 6 Now, would you expect, therefore, the reasonably
 7 competent cladding contractor to have a system for
 8 disseminating updates to those within the organisation
 9 to whom they were applicable, for example in relation to
 10 design? Would you expect there to be a system for
 11 disseminating technical design updates to those within
 12 the organisation who were responsible for the design of
 13 cladding systems?
 14 A. Yes.
 15 Q. Yes.
 16 Now, I'd now like to ask you some questions about
 17 the potential role which a specialist façade engineer or
 18 specialist façade consultant could play if appointed.
 19 Just to be clear, no such specialist was appointed on
 20 the Grenfell project, either at the pre—novation stage
 21 or at the post—novation stage once Rydon were appointed
 22 as the main design and build contractor.
 23 You very helpfully set out some history surrounding
 24 the role that a specialist façade engineer or contractor
 25 can play, and if we can start by looking at page 23 of

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1 your report {JOS00000001/23}, at 6.1.1 and following —
 2 I'm not going to read it all out — you have explained
 3 that there was this evolution of this role of the
 4 specialist façade engineer or consultant, and you say at
 5 6.1.1:
 6 "During the 1970s and 1980s people with experience
 7 in the facade industry began to offer services as
 8 consultants, typically to building owners and
 9 architects. Initially these were individual
 10 consultants, but by the early 1990s the larger
 11 multi—disciplinary consultancies in the UK began to
 12 recognise the value of providing facade consultancy as
 13 a new specialised service."
 14 Then you explain certain terms in 6.1.2. Picking it
 15 up halfway through that paragraph, you say:
 16 "Like other kinds of engineer, this service [ie the
 17 service of a façade engineer] implied a more 'hands—on'
 18 approach, involving for example structural and thermal
 19 calculations and detailed design and specification.
 20 This is distinct from a pure consultancy role, involving
 21 for example the review of architect's drawings."
 22 You tell us in 6.1.3 that you use the single term
 23 "façade engineer" for brevity.
 24 At 6.1.4 and following, you provide a little bit
 25 more about the history of how the architectural and

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1 other construction professionals have evolved. I'm not
 2 going to read all of that out, but you talk about the
 3 evolution, for example, of building services engineers
 4 in the middle of the 20th century, and at 6.1.6 at the
 5 bottom of that page, you say:
 6 "Similarly the growth of facade engineering during
 7 the last quarter of the 20th century was driven by the
 8 need for building owners and architects to receive sound
 9 technical facade advice independent of any commercial
 10 interests. The people coming into facade engineering
 11 were from a variety of backgrounds: from the design and
 12 technical departments of facade contractors themselves;
 13 from architects with a technical bent; from product and
 14 industrial designers; from building physics specialists;
 15 and from structural engineers."
 16 Then at 6.1.9 you go on to explain that:
 17 "The advice given [by such façade engineers]
 18 reflected the increasingly complex technical nature of
 19 facades in the second half of the 20th century, and
 20 generally both building owners and architects welcomed
 21 this advice at the pre—contract stages of the project."
 22 But you then explain later in that paragraph that,
 23 as well as providing services at that stage, many main
 24 contractors also had the appointment of specialist
 25 façade contractors.

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1 At 6.1.10, if we can scroll up, we can see:
 2 "The new service was generally welcomed by other
 3 professionals in the field, as it was recognised that
 4 the facade of the building was the part that had
 5 historically given rise to the largest proportion of
 6 building problems, such as rainwater penetration,
 7 condensation, breakages and so on. Most architects in
 8 particular saw the role of a facade engineer as helpful
 9 to them in minimising potential future liabilities with
 10 regard to the facade."
 11 So that's the background and the genesis of façade
 12 engineers, and if we look at page 25 of your report
 13 {JOS00000001/25}, you tell us at 6.2.3 that:
 14 "In 2004 the Society of Facade Engineering (SFE) was
 15 founded jointly by the Royal Institute of British
 16 Architects (RIBA), the Institution of Structural
 17 Engineers and the Chartered Institution of Building
 18 Services Engineers ..."
 19 You tell us at the end of that paragraph:
 20 "The SFE is a growing professional society, and acts
 21 as a 'qualifying' body for facade engineers. However,
 22 there is currently no requirement in the UK for a facade
 23 engineer to be a member of the SFE in order to
 24 practise."
 25 Just to be clear, it's right, isn't it, that façade

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1 engineer and façade consultant are not protected titles,
 2 and what I mean by that is those terms are not legally
 3 restricted to use by particular persons who have
 4 completed specific training or education?
 5 A. That's correct, yes.
 6 Q. Yes.
 7 You note in your report that there is no current
 8 requirement for a façade engineer to be a member of the
 9 Society of Façade Engineering; that's right, isn't it?
 10 A. Yes.
 11 Q. Is it also right that there is not a minimum
 12 qualification level for any grade of membership of the
 13 SFE?
 14 A. Oh, I think there probably is, yes.
 15 Q. I see.
 16 A. Yes.
 17 Q. I see, okay.
 18 If we turn now to paragraph 6.5.1 of your report on
 19 page 27 {JOS00000001/27}, you tell us there:
 20 "Going back to the early 1990s it would not have
 21 been common for a facade consultant to be appointed for
 22 an overcladding project of this type. However, it was
 23 not unheard of, and I give in paragraph 6.6 below an
 24 example. However, by 2012 in my experience it would
 25 have been normal for a facade engineer to be appointed

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1 for any large or complex project. The overcladding of
 2 a high-rise residential tower is a large project, but it
 3 may not be complex. The situation in which a facade
 4 engineer would not be appointed for this kind of project
 5 would be where the architect had enough technical
 6 knowledge and relevant experience not to require the
 7 additional expertise, or where the building owner did
 8 not wish to pay for an additional consultant."
 9 Now, just to be clear, the example that you give,
 10 that you're referring to three lines down in that
 11 paragraph of a project where a façade consultant was
 12 appointed pre-2012 was the Hackney, East London project
 13 you were referring to earlier; is that correct?
 14 A. Yes.
 15 Q. Yes. You tell us that the overcladding of a high-rise
 16 residential tower is a large project, and we touched on
 17 that earlier, but it may not be complex.
 18 Would you agree that the appointment of a façade
 19 engineer or consultant is necessary on a large or
 20 a complex cladding project?
 21 A. Well, it's as I've said here, I wouldn't use the word
 22 "necessary". I've been careful not to say that it has
 23 to be required. It depends on the capabilities of the
 24 architect.
 25 Q. Yes.

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1 A. Some architects are comfortable with their technical
 2 knowledge and feel that they don't need the services of
 3 a façade engineer.
 4 Q. Yes.
 5 A. Others welcome it, and would rather have a façade
 6 engineer on board.
 7 Q. Yes.
 8 In terms of Grenfell Tower, was that a complex
 9 project in your opinion?
 10 A. Not really, no. Not from a façade point of view.
 11 Q. In reaching that view, have you taken into account not
 12 simply the selection of materials but also the
 13 geometrical challenges presented by Grenfell Tower
 14 itself, for example the configuration of the columns and
 15 the relationship between the spandrels and the windows,
 16 for example as highlighted by Mr Hyett in the
 17 presentation that he did with his physical model?
 18 A. All right, I mean, it's got some geometrical complexity,
 19 but it's nothing compared with some buildings I can
 20 think of. By comparison with really state of —
 21 cutting-edge buildings, it's not especially complex, in
 22 my view.
 23 Q. I see. So you maintain your view that Grenfell Tower
 24 was a large project but not a particularly complex
 25 project in terms of façade design?

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1 A. Yes.
 2 Q. Is the main consideration to be taken into account when
 3 deciding whether a façade engineer is necessary for
 4 a large project the capability of the existing
 5 professional team?
 6 A. Effectively, yes.
 7 Q. Yes.
 8 A. Yes.
 9 Q. Now, in terms of the pre—novation stage, so the
 10 potential appointment of a façade consultant by the
 11 client, in this case that would be the TMO, if we look
 12 at paragraph 6.6.2 on page 27 of your report
 13 {JOS0000001/27}, we can see that you're asked the
 14 question just before 6.6.2 in italics :
 15 "Would you expect consideration to have been given
 16 to the appointment of a façade engineer or consultant to
 17 advise a Local Authority on a project such as the
 18 refurbishment of Grenfell Tower? If so, by whom would
 19 you expect such an appointment to have been considered?"
 20 You say at 6.6.2:
 21 "In the case of the Grenfell Tower refurbishment
 22 I would expect such an appointment to have been
 23 considered by the Tenant Management Organisation, in
 24 dialogue with Studio E, during the pre—novation phase.
 25 The dialogue would have needed to address whether

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1 Studio E had the required experience and/or technical
 2 expertise in overcladding a tall residential building."
 3 So that's what you told us you would have expected.
 4 So does it follow that you would have expected the
 5 client, the TMO, to have been aware of the availability
 6 of façade engineers and façade consultants as
 7 a potential resource to assist with the design and
 8 specification of the overcladding system?
 9 A. I wouldn't be sure if the TMO would have been aware of
 10 it, but I'm sure that Studio E would have been aware of
 11 that possibility.
 12 Q. I see. So is it your opinion that the person initiating
 13 the discussion about whether a fire[sic] engineer should
 14 have been appointed should have been the architect in
 15 this case?
 16 A. Probably, yes.
 17 Q. Yes.
 18 A. Yes.
 19 SIR MARTIN MOORE—BICK: Did you mean a fire engineer?
 20 A. Façade engineer.
 21 MS GRANGE: Sorry, I didn't mean fire engineer, I meant
 22 façade engineer or façade consultant. Yes, thank you.
 23 Can we just look at Mr Hyett's expert report for
 24 a moment, this is at {PHYR0000027/17}. He says at
 25 2.5.14:

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1 "Accordingly, it is my opinion that at the time of
 2 the appointment Studio E would rightly have considered
 3 themselves well able to undertake a project of the type,
 4 size and complexity of the Grenfell Tower refurbishment
 5 and over—cladding, albeit I would expect that they
 6 should have recognised that their then current levels of
 7 knowledge and skill would need to be expanded. This
 8 could have been done by undertaking research into the
 9 discrete characteristics of the project that they were
 10 about to undertake and, if necessary, making some
 11 strategic hires. Such approaches are common amongst
 12 architects when undertaking new commissions."
 13 So with reference to Mr Hyett there saying that they
 14 perhaps ought to have thought about supplementing its
 15 knowledge by making strategic hires, would you also
 16 suggest that they should have considered obtaining
 17 advice from a façade consultant or engineer?
 18 A. Well, I'm not making a comment — I haven't made
 19 a comment on Studio E's capabilities, I've only said
 20 that it would have been normal to have the discussion.
 21 Q. Yes.
 22 A. I haven't assessed as part of my brief Studio E's
 23 capability for this.
 24 Q. I understand.
 25 A. So I wouldn't answer your question: yes, they should

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1 have considered it. But if they had doubts about their
 2 capability to do this, and that's a question they needed
 3 to consider themselves —
 4 Q. Yes.
 5 A. — then they should have considered appointing a façade
 6 engineer.
 7 Q. Yes, that's helpful.
 8 If we assume hypothetically that a façade engineer
 9 or consultant had been appointed at the pre—novation
 10 stage, ie prior to the appointment of Rydon as design
 11 and build contractor, in your experience would such
 12 a façade engineer have had a role in selecting or
 13 specifying products for use in the façade?
 14 A. Pre—contract, you mean?
 15 Q. Yes.
 16 A. In my experience, products were rarely specified by
 17 their specific product name, but more generically —
 18 Q. Yes.
 19 A. — or by performance characteristics. So it's quite
 20 unusual, in my experience, to specify a particular
 21 product. I mean, I have been involved in one project
 22 where we did do that. That was highly unusual. It's
 23 not normal.
 24 Q. Yes. Yes, that's helpful.
 25 A. The point being that it's usually left to the contractor

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1 to propose a product and then the consultant reviews its
2 acceptability .
3 Q. Yes.
4 Would you anticipate that there would be design
5 development meetings between the architect and any
6 façade engineer to look at the development of the design
7 for the façade?
8 A. Oh, absolutely, yes.
9 Q. Yes.
10 Now, you've picked up in your report the fact that
11 for the Grenfell Tower project the structural engineer,
12 Curtins Consulting, wrote a specification for the
13 overcladding work which did address more than just
14 structural matters.
15 If we can look at where you deal with this in your
16 report, if we go to page 27 {JOS00000001/27}, and look
17 at 6.6.3, I just want to read what you have put there.
18 You say:
19 "I note, however, that the appointed structural
20 engineer, Curtins Consulting, wrote a specification
21 entitled 'Structural Performance Specification for the
22 Design, Supply and Application of Overcladding Systems
23 to Grenfell Tower', dated March 2013. Section 7.0 of
24 this document is called 'Overcladding' and addresses
25 more than just structural considerations. For example,

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1 weather performance and fire matters are also covered.
2 Although not covered by my present brief, I notes the
3 following extracts ..."
4 Then you've put in a couple of extracts, one where
5 it says the system should comply with the BRE 135
6 document, and then an extract where it says
7 {JOS00000001/28}:
8 "The system shall not be a fire risk at any stage of
9 installation, nor shall it constitute a fire hazard
10 after completion if for any reason the insulant becomes
11 exposed."
12 You say in the following paragraph:
13 "I mention the above because it appears that
14 Curtins Consulting covered both structural and
15 non-structural issues in connection with the
16 overcladding, and that fact may have contributed to the
17 TMO's decision not to appoint a facade engineer."
18 Now, in your experience, was it unusual for
19 a structural engineer to write a specification for
20 a façade which went beyond purely structural matters?
21 A. Yes, very unusual.
22 Q. Right. So this was an unusual situation —
23 A. Yes.
24 Q. — in this instance?
25 You then go on in the next paragraph, 6.6.5, you

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1 say:
2 "The issue of who would pay the fees for a facade
3 engineer would always be a factor in the discussion .
4 Some building owners consider that they are already
5 paying the architect to design and specify the facade of
6 the building, and they do not see a need to pay another
7 consultant to do this. In cases where the building is
8 large or of a complex nature, the architect may
9 nevertheless convince the building owner that the
10 appointment of a facade engineer is necessary."
11 Now, in circumstances where the architect at the
12 pre-novation stage did not raise the appointment of
13 a façade engineer and did not flag any difficulty with
14 carrying out the design, would you still have expected
15 the client to consider the appointment of one?
16 A. No, I think it should have been considered, but if the
17 architect satisfied the client that they had the
18 necessary technical expertise and experience, then
19 I can't see the client insisting on it.
20 Q. Right. So you're clear that it should have been thought
21 about and discussed at that stage?
22 A. Yes.
23 Q. Yes.
24 Now, at paragraph 9 in the summary of your report,
25 if we could go to page 4 {JOS00000001/4}, this is where

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1 you're summarising your opinions —
2 A. Sorry, have we left that topic, or —
3 Q. No, no, I'm still on the topic of a façade engineer
4 pre-novation. I'm going to look at post-novation in
5 a moment.
6 A. Okay, right.
7 Q. Paragraph 9 in this summary, you say:
8 "The advantage of facade consultancy or engineering
9 for the building owner or architect is that the
10 technical advice given is not attached to any commercial
11 interests. The engineers involved are expected to have
12 detailed technical knowledge of the construction
13 industry, and thereby to act as a trusted intermediary
14 between the architect or building owner and the
15 industry."
16 Now, can you just help us as to what it is that
17 protects a façade engineer from being linked to
18 commercial interests, as you've indicated there?
19 A. Yes, what I mean is if you're talking about getting
20 advice from a manufacturer, for example, it's in the
21 manufacturer's interest to sell their products, so
22 of course it's hard to say that they won't be biased in
23 their opinion because they've got a direct commercial
24 interest in selling product A or product B.
25 Q. Yes.

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1 A. Whereas in the case of a façade engineer who presumably
 2 is not a shareholder in a manufacturing company, then
 3 the advice given is based on purely technical
 4 considerations and they don't stand to gain or make
 5 profit from their advice.
 6 Q. Yes.
 7 What about advice given at an early stage by
 8 a specialist cladding contractor? Would you have
 9 reasonably expected that to be attached to commercial
 10 interests, or would you expect that to be independent in
 11 the same way that the façade engineer would be?
 12 A. They're in a halfway stage probably between the
 13 manufacturer and the consultant. But inevitably
 14 a contractor is in a position where they have to build
 15 something for a certain sum of money, and it's in their
 16 interests to use products which satisfy the
 17 specification but not pay over the odds for those
 18 products so that they maximise their return.
 19 Q. Yes.
 20 A. So, yes, there are commercial interests.
 21 Q. Yes, so if at the pre-novation stage Studio E or anyone
 22 else, including the TMO, went only to cladding
 23 contractors or manufacturers, there is a danger that the
 24 advice that you're getting is going to be influenced by
 25 those commercial interests?

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1 A. Yes.
 2 Q. Yes.
 3 Now, just moving on to think about the post-novation
 4 stage, so imagine we're in a design and build context,
 5 a design and build contractor is appointed as occurred
 6 on Grenfell Tower, at that stage and once the principal
 7 contractor is on board, would you expect that principal
 8 contractor itself to be, first of all, aware of the
 9 existence of façade consultants as a potential resource?
 10 A. Yes.
 11 Q. Would you have expected a design and build contractor on
 12 a project like Grenfell Tower to have at least
 13 considered the appointment of a façade engineer or
 14 consultant?
 15 A. Yes.
 16 Q. What about a specialist cladding contractor themselves,
 17 so ie those akin to Harley Façades; are there ever
 18 circumstances in which they may consider appointing
 19 a façade consultant directly for advice?
 20 A. I can't see it being necessary in this context, no. The
 21 sort of situation would be where the specialist
 22 contractor did not have their own design office, and
 23 typically they might hire an outside engineer to do the
 24 detailed structural design, for example, or sometimes
 25 an outside drafting company to do the detailed drawings

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1 and so on. But as I understand it, on this particular
 2 project, that wasn't needed, they had in-house
 3 capability, as I — oh, sorry, they did subcontract it,
 4 but that subcontractor had that capability.
 5 Q. Yes.
 6 Does the fact that Harley didn't have anyone with
 7 a completed qualification in façade engineering, nor
 8 anyone formally appointed to the role of technical
 9 manager at the time of the Grenfell Tower refurbishment,
 10 have any bearing on this question?
 11 A. I don't think having a technical qualification in façade
 12 engineering per se had a bearing on it. What was the
 13 second part of your question?
 14 Q. Yes, nor was there anyone appointed to the role of
 15 a technical manager at the time of the Grenfell Tower
 16 refurbishment.
 17 A. I'm not quite sure about what the role of that technical
 18 manager would have been.
 19 Q. Yes.
 20 A. They certainly needed someone who was a technical design
 21 person —
 22 Q. Yes.
 23 A. — who would have been reviewing and reviewing technical
 24 submissions and drawings and preparing information to
 25 send to the architect and so on for review.

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1 Q. Would that technical design person need to be able to
 2 make an assessment of fire performance and fire safety
 3 as well as structural performance and structural safety?
 4 A. Yes, that would have been one of the many things they
 5 had to consider, yes.
 6 Q. Yes.
 7 If we can turn to section 6.3 on page 25 of your
 8 report {JOS00000001/25}, you're asked the question, you
 9 can see in bold and italics:
 10 "If a façade engineer or consultant was not
 11 instructed on a project, who would you expect to
 12 undertake that role or perform the duties ordinarily
 13 carried out by such a person?"
 14 At 6.3.3 at the bottom of that page, you say:
 15 "If, however, the façade engineer would have been
 16 appointed by the main contractor, and they were not so
 17 appointed, their role would have to be carried out by
 18 the main contractor's own design office or by an
 19 architect appointed by the main contractor as
 20 a sub-consultant. If none of these sources of expertise
 21 were available, the specialist facade contractor would
 22 have to be relied upon to provide the necessary design
 23 and technical expertise."
 24 So that's your evidence there.
 25 Is it your opinion that if a façade engineer was not

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1 appointed and such expertise was not available
 2 elsewhere, the reasonably competent specialist cladding
 3 contractor could be relied upon to have such design and
 4 technical expertise in-house?
 5 A. Yes, if they were reasonably competent.
 6 Q. Yes. So any reasonably competent cladding contractor,
 7 in the absence of someone else being appointed, ought to
 8 have had the relevant design and technical expertise?
 9 A. Yes.
 10 Q. Yes.
 11 A. If I could just add —
 12 Q. Yes.
 13 A. — I have experienced in my own career situations where
 14 the main contractor wanted to vet the information being
 15 provided by the specialist subcontractor, and therefore
 16 wanted to appoint a façade consultant to review the
 17 subcontractor's work.
 18 Q. Yes.
 19 A. That's not that uncommon.
 20 Q. Yes.
 21 A. I've had a few cases like that. So I think it wouldn't
 22 happen — if the main contractor was comfortable enough
 23 with the technical expertise of the subcontractor that
 24 they didn't feel they needed to review it —
 25 Q. Yes?

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1 A. — then that wouldn't happen. But if they felt that
 2 they had some concerns about it, then they would appoint
 3 a façade engineer to be a sort of intermediary.
 4 Q. Yes. That sounds like there ought to have been some
 5 assessment by the main contractor of the technical
 6 expertise and competence —
 7 A. Yes.
 8 Q. — of the cladding subcontractor; is that right?
 9 A. Yes.
 10 Q. Can you give us an example, what's the nature of that
 11 assessment? How would you find out that information
 12 about whether your cladding subcontractor had the
 13 necessary design and technical expertise to mean that
 14 you didn't need another resource or another checking
 15 exercise to be carried out?
 16 A. Probably I would imagine through a process of
 17 interviewing.
 18 Q. Yes.
 19 A. Meeting the MD and the chief technical person and just
 20 getting a sense of what their capabilities were.
 21 Q. Yes.
 22 Now, you say on page 22 of your report
 23 {JOS00000001/22}, if we can go to that, at
 24 paragraph 5.2.2:
 25 "It therefore follows that a reasonably competent

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1 cladding contractor would be expected to have a person
 2 or people in their technical department who had the
 3 expertise necessary to deal with the design and
 4 technical matters that were likely to arise. Such
 5 people would be expected to recognise where there were
 6 gaps in their expertise, and to know how to go about
 7 filling those gaps, either through research or by
 8 consulting others with the appropriate expertise."
 9 Now, take the kind of average UK cladding
 10 contractor, a reasonably competent one. Would you
 11 expect it to be one individual within that organisation
 12 with the necessary technical and design expertise, or
 13 would you expect there to be a team of people who would
 14 all have that expertise?
 15 A. It really depends how large the contractor is.
 16 Q. Yes.
 17 A. If it's a small contractor, you might just have one
 18 person, and, you know, large contractors have several.
 19 Q. Yes.
 20 Can you give us an idea of precisely what experience
 21 and qualifications you would expect such a person or
 22 such people to have obtained in order to be competent to
 23 deal with design and technical matters?
 24 A. I wouldn't necessarily say they had to have a particular
 25 academic qualification. I mean, some people have

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1 degrees, other people don't, but they may be perfectly
 2 capable of doing the work. It's probably experience is
 3 as important, if not more important.
 4 Q. Yes. So experience of designing façades and dealing
 5 with all aspects of the façade design, including fire
 6 performance; yes?
 7 A. Yes.
 8 Q. Yes.
 9 Just some further questions about the obligations of
 10 a design and build subcontractor.
 11 If we look at page 26 of your report
 12 {JOS00000001/26}, paragraph 6.4.2, let's start with the
 13 question that you're posed there. We can see from the
 14 question at 6.4, "Responsibility for designing the
 15 facade", that you're asked the question:
 16 "How would that person's role relate to the role of
 17 the architect? If both were appointed, which of them
 18 would normally take primarily responsibility for
 19 designing the façade?"
 20 So here you're being asked a question which touches
 21 on the division of responsibility between an architect
 22 who may have been appointed at the pre-novation stage as
 23 well and then a cladding contractor designing the
 24 façade.
 25 At 6.4.2 you explain that it may depend on how the

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1 contract is written in terms of responsibilities , and
 2 you give us some specific examples — I'm not going to
 3 read this all out — in the context of what the Grenfell
 4 contract says. You say in that paragraph that there was
 5 a general obligation on the main contractor which was
 6 passed on to Harley in relation to the façade works, and
 7 that included the design of the façade.
 8 Is it right that it wouldn't be possible to complete
 9 a design of a façade without first considering and
 10 accepting or rejecting the basic premise of the design
 11 that the cladding contractor was inheriting based on the
 12 work of the architect at the pre-novation stage?
 13 A. Yes. There's an interaction, really. On the one hand,
 14 the specialist contractor would take it that the
 15 architect had done a reasonable job in producing
 16 a design which was technically sound and compliant with
 17 regulations. On the other hand, the subcontractor took
 18 on that responsibility and therefore had to satisfy
 19 themselves that it was technically competent and
 20 compliant. So it couldn't just rely on the architect
 21 having done it, but had to satisfy themselves
 22 independently that it did in fact do the job.
 23 Q. Yes, that's very helpful.
 24 Now, in your experience, and in circumstances
 25 where — and I know you said this is unusual — product

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1 selection had occurred —
 2 A. Yes.
 3 Q. — in the architect's specification — so they've not
 4 just done a performance specification, you've actually
 5 got some products selected — would you expect
 6 a reasonably competent cladding contractor responsible
 7 for the design of the façade to have reconsidered that
 8 product selection as part of its design obligations and
 9 its design work?
 10 A. Yes, I think it had a duty of care to satisfy itself
 11 that the products met the specification and regulations,
 12 yes.
 13 Q. Yes. So you wouldn't just take a product that was in
 14 the spec —
 15 A. Yes.
 16 Q. — say, "Well, it must be compliant, it must be fine,
 17 we'll work with that and just move forward to deal with
 18 fixings, et cetera", you would actually ask yourself the
 19 question afresh whether that was the right product for
 20 this job; yes?
 21 A. Yes.
 22 Q. Yes.
 23 Can you help us as to how it would work in practice
 24 in terms of how much weight would be placed on the
 25 design work of an architect? What kind of factors would

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1 influence how much weight you would place on that design
 2 if you were the design and build subcontractor coming in
 3 with design responsibility?
 4 A. In the sense of weight in the sense of confidence in
 5 that design, you mean?
 6 Q. Yes, what factors would influence how confident you were
 7 in that design and the extent to which you would place
 8 any weight on it, if that makes sense?
 9 A. Yes, I suppose it would have to depend to some extent on
 10 the experience and reputation of the architect, and what
 11 one felt about them. If one had, let's say, a small
 12 inexperienced architect, the cladding contractor would
 13 probably look at it more closely, in practice. Or on
 14 the other hand, if you had a big international
 15 experienced architect, they might look at it a bit less
 16 closely. But, to be honest, my feeling is their duty of
 17 care is the same in both cases.
 18 Q. Yes, thank you.
 19 Let's take the example of cavity barriers for
 20 a moment. In circumstances where some work had been
 21 done on a cavity barrier scheme and design by the
 22 architect, in your view, would the reasonably competent
 23 cladding contractor have checked that those
 24 cavity barriers were in fact compliant with relevant
 25 guidance, including Approved Document B?

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1 A. It's interesting. If you go back to the previous page,
 2 in answering your question —
 3 Q. Yes, page 25 of your report {JOS00000001/25}.
 4 A. Yes. Oh, sorry. No, sorry, we're at a different
 5 section. I'm sorry, I thought we were in a different
 6 section of the report.
 7 Q. Don't worry. If you can tell us which section you want
 8 to be in, I can ...
 9 A. It was when we were talking about the appointment of the
 10 cladding contractor and the appointment of the architect
 11 post-contract. The cladding contractor's appointment
 12 said something quite specific, which was they have
 13 detailed design responsibility.
 14 Q. Yes.
 15 A. I don't recall that being said in the architect's
 16 appointment, but it did say in the architect's
 17 appointment that they had responsibility for
 18 co-ordinating compliance, I think.
 19 Q. Yes.
 20 A. Something like that, those words.
 21 Q. So if you go back, I think, to page 26 of your report
 22 {JOS00000001/26}.
 23 A. Yes.
 24 Q. You were dealing with it at 6.4.2.
 25 A. There, yes.

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1 Q. Is that the bit you wanted?
 2 A. Yes.
 3 Q. Is it 6.4.3:
 4 "By contrast, Rydon's contract with Studio E was
 5 much more specific and referred ..."
 6 A. If you just scroll down a bit.
 7 Yes, you see, it refers to "co-ordination of
 8 building regulations approvals".
 9 Q. Yes.
 10 A. That seemed to be Studio E's responsibility according to
 11 their contract.
 12 Q. Yes.
 13 A. On the other hand, Harley's responsibility seems to be
 14 they remain fully responsible for the design, including
 15 relevant compliances. So there's a bit of an overlap
 16 there, and I think it's tricky when both an architect
 17 and a cladding subcontractor are both appointed to have
 18 some design responsibilities, it's a bit tricky to know
 19 who's really ultimately responsible. They both are,
 20 really.
 21 Q. Yes. Could co-ordination of Building Regulations
 22 approvals be effectively the co-ordination and the
 23 communication with building control, leaving the
 24 cladding subcontractor to be fully responsible for the
 25 design?

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1 A. Yes, it could be read like that, yes.
 2 SIR MARTIN MOORE-BICK: Well, before you go on, Ms Grange,
 3 I would find it helpful to have an answer to the
 4 question that Ms Grange had actually asked you before
 5 that little diversion, which was this: in a case where
 6 some work had been done on the cavity barrier scheme and
 7 design by the architect, would the reasonably competent
 8 cladding contractor have checked that the
 9 cavity barriers were in fact compliant with ADB? In
 10 other words, would he regard himself —
 11 A. Yes.
 12 SIR MARTIN MOORE-BICK: — as under an obligation —
 13 A. Yes.
 14 SIR MARTIN MOORE-BICK: — to check the architect's work?
 15 A. Yes. The answer is yes.
 16 SIR MARTIN MOORE-BICK: Thank you.
 17 MS GRANGE: Yes, thank you.
 18 If the reasonably competent cladding contractor had
 19 subcontracted the installation itself of the
 20 cavity barriers to another company, would you expect
 21 that cladding contractor themselves to carefully
 22 supervise and regularly check the installation to ensure
 23 it was compliant?
 24 A. Yes.
 25 Q. Yes.

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1 Now, if we go to page 27 of your report now
 2 {JOS00000001/27}, and 6.6.3, this is where you're
 3 discussing the Curtins Consulting specification that was
 4 prepared for Grenfell Tower that we've just discussed.
 5 We can see that this Curtins specification expressly
 6 states that the system should comply fully with the
 7 BR 135 document. I think you see that over the page
 8 {JOS00000001/28}, if we look one page over. There at
 9 7.1.13:
 10 "The system should comply fully with ... the BRE
 11 document ..."
 12 In those circumstances, and assuming for the moment
 13 that this Curtins specification was incorporated into
 14 Harley's subcontract for the cladding work, would you
 15 have expected someone within Harley to have read BR 135
 16 in full?
 17 A. Yes.
 18 Q. And the Curtins specification to which you refer there
 19 also incorporated two further CWCT documents. It's the
 20 two CWCT documents that we discussed earlier, the older
 21 ones, the standard for walls with ventilated rainscreens
 22 from 1998 and the guide to good practice for façades
 23 from 1996.
 24 Again, the same question: in those circumstances,
 25 where you have express incorporation of particular

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1 guidance documents in the subcontract, do you consider
 2 that the reasonably competent cladding contractor should
 3 have read those documents as well?
 4 A. Yes.
 5 Q. Yes.
 6 Just briefly, if we turn to that CWCT standard, the
 7 standard for walls with ventilated rainscreens, first
 8 published in 1998, at {CWCT0000053/45}.
 9 If we look in the middle of that page,
 10 paragraph 2.20.4, there is a section "Ventilated
 11 cavity". It says:
 12 "The cavity behind the rainscreen and in front of
 13 the air barrier should not include materials which can
 14 significantly promote flame spread within the unseen
 15 cavity. In general this zone may contain a timber,
 16 aluminium or other metal vertical framework and
 17 an appropriate non-combustible insulation."
 18 Do you see that there?
 19 A. Yes.
 20 Q. And the note on the right of this section in slightly
 21 smaller typeface, you can see it says on the right:
 22 "The use of any combustible material for the
 23 cladding framework and insulation within the cavity may
 24 need to be carefully considered as the building height
 25 increases. It is often necessary for the purpose of

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1 ventilation to sub—divide the building into
 2 compartments ..."
 3 Then at 2.20.8 on page 46 {CWCT0000053/46}, we can
 4 see under the heading "Insulation in the cavity" it
 5 tells us:
 6 "Where it is necessary to provide insulation in the
 7 cavity fixed to the outer face of the air barrier for
 8 the purposes of thermal insulation and condensation
 9 control then the insulation shall be of
 10 a non—combustible type."
 11 A. Yes.
 12 Q. Then on the right it says:
 13 "In certain conditions insulation with appropriate
 14 surface spread of flame characteristics may be
 15 considered. However, the use of a separate
 16 fire barrier, not incorporating the combustible
 17 insulation, should always be specified."
 18 So we have those excerpts there.
 19 Then if we look at the other CWCT document from
 20 1996, which is at {CWCT0000055/13}, this is the guide to
 21 good practice for façades. We can see at
 22 paragraph 4.10.1, under "Thermal Insulation", it says:
 23 "Thermal insulation shall be inert, durable, rot and
 24 vermin proof and should not be degradable by moisture or
 25 water vapour. Attention is drawn to the fire

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1 performance of some insulating materials as set out in
 2 the relevant Standard."
 3 So we can see that there was guidance within those
 4 CWCT documents about the need for non—combustible or
 5 inert insulation.
 6 Now, taking those excerpts —
 7 A. Just to be clear, inert doesn't mean non—combustible.
 8 Just to be — so we're not —
 9 Q. No, I understand that. I do understand that.
 10 A. Yes.
 11 Q. But taking those excerpts into account, would you agree
 12 that if the Curtins performance specification was
 13 followed, which incorporated express reference to these
 14 two documents, it would have led a reasonably competent
 15 cladding contractor to select non—combustible or at
 16 least limited combustibility insulation?
 17 A. Yes. However, I'd like to qualify that.
 18 Q. Yes, please go on.
 19 A. Which is, as we discussed earlier, the Approved
 20 Document B would have been considered together with
 21 these documents, and I think a cladding contractor
 22 probably would have looked at Approved Document B and
 23 said, "Well, Approved Document B allows me to do this,
 24 so I'll follow that", because it would have had
 25 a greater weight.

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1 Q. Yes, I see, yes. Yes.
 2 Now, fire strategy reports now. I want to ask you
 3 some questions about cladding contractors' obligations
 4 in relation to fire strategy reports.
 5 If we go to page 62 of your report {JOS00000001/62},
 6 this is under the heading, "Relationship between
 7 cladding contractor and fire engineer" this time. We
 8 can see that you're asked the question at (a) below
 9 that:
 10 "To what extent was it the practice for fire safety
 11 or fire strategy reports prepared by fire engineers to
 12 be considered by specialist cladding designers or
 13 contractors?"
 14 You tell us at 18.1:
 15 "Fire safety and fire strategy reports contain much
 16 information relevant to their subject matter. I would
 17 expect a cladding contractor to have read these reports
 18 and to take note of any matters which affected their
 19 work, particularly with regard to materials and design
 20 detailing."
 21 Just pausing there. When you say there,
 22 "Fire safety and fire strategy reports contain much
 23 information relevant to their subject matter", can you
 24 just expand on that for us and explain what information
 25 a cladding contractor would typically expect to find in

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1 a fire safety strategy report which would be relevant to
 2 their work?
 3 A. Well, it might contain information about the
 4 requirements for cavity barriers, for example. It might
 5 say cavity barriers shall be provided at so many centres
 6 or having a capability of so many minutes or something,
 7 information that could be got from the approved
 8 document, but the fire strategy report might have set
 9 out that information just to make it easier.
 10 Q. Yes.
 11 A. It might show where means of escape routes were.
 12 Sometimes parts of the façade have to be breakable so
 13 that means of escape can be achieved, occasionally, or
 14 breakable so that the Fire Brigade can get into the
 15 building in an emergency.
 16 What else?
 17 There might be situations where parts of the
 18 building had to be fire resistant because they were
 19 near, for example, a railway line or something, and
 20 therefore they had to have a two—hour fire rating or
 21 something like that.
 22 So that sort of information.
 23 Q. Yes, thank you.
 24 Now, in circumstances where these fire strategy
 25 reports or report had not been provided to a cladding

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1 contractor, would you expect the reasonably competent
 2 cladding contractor to ask whether such fire safety
 3 reports existed for a project like Grenfell Tower?
 4 A. If they weren't provided as part of their contract,
 5 I would expect them to ask the question whether they
 6 existed if an issue arose that would have been covered
 7 by such a report. You know, if there was some question
 8 mark about something or other, and I can imagine the
 9 contractor asking: well, what does the fire strategy
 10 report say? You know, but in the absence of such
 11 a question, I wouldn't imagine they would ask for such
 12 a report.
 13 Q. Right. So they're not such important documents or
 14 documents that are so routinely provided to cladding
 15 contractors that you would expect in the abstract at
 16 least the question to be posed: is there a fire strategy
 17 report for this building?
 18 A. No.
 19 Q. No.
 20 A. The point being is that a cladding contractor would be
 21 expected to provide all necessary documentation by the
 22 main contractor.
 23 Q. Yes, and if there was no such fire safety strategy
 24 available to the cladding contractor at the point in
 25 a project when the cladding was being designed, would

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1 you expect a question to be raised at that stage, "We're
 2 at the cladding design stage, is there a fire strategy
 3 report that we need to be taking into account?"
 4 A. Sorry, at the pre-contract stage?
 5 Q. Well, at any point when the cladding is being designed.
 6 Let's assume it's Harley. They've come in as Rydon's
 7 subcontractor.
 8 A. Yes.
 9 Q. They're going to take Studio E's design work and carry
 10 it forward to carry on designing the façade. Would you
 11 expect them to ask Rydon whether there was a fire safety
 12 strategy for the building?
 13 A. Well, as I said, it's really the same answer: I wouldn't
 14 expect them to ask for it unless there was a specific
 15 issue that had arisen which suggested that they needed
 16 it.
 17 Q. Yes.
 18 At paragraph 18.2 of your report {JOS00000001/62},
 19 it's there on the screen, we can see you have been asked
 20 the question:
 21 "If a fire engineer had been appointed, to what
 22 extent was it the practice for there to be collaboration
 23 between the fire engineer and the cladding designer or
 24 contractor."
 25 Then you answer at 18.2:

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1 "Following on from their reading of the
 2 fire strategy or fire safety reports, or related risk
 3 assessments, the cladding contractor might have
 4 questions and seek clarification on some issues."
 5 So that's the evidence you were just giving.
 6 You go on, you say:
 7 "During the course of a contract I would therefore
 8 expect them to raise these questions with the
 9 appropriate party. Contractually, this would normally
 10 be via the main contractor, but in practice the cladding
 11 contractor might address the architect on this, or even
 12 the fire consultant directly, provided that all
 13 correspondence is copied to the main contractor. If the
 14 cladding contractor were to deal with the fire
 15 consultant directly in this way, they would need to have
 16 been authorised to do so by the main contractor."
 17 In your experience, what kind of questions or
 18 clarifications would a cladding contractor typically
 19 raise having reviewed the fire safety strategy reports?
 20 A. Well, a good one, because I believe it's come up in
 21 evidence in the Inquiry, has been what fire rating did
 22 the cavity barriers need to have.
 23 Q. Yes.
 24 A. And I noted that issue went round and round several
 25 times before it was resolved. So that's the sort of

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1 thing that they might have addressed —
 2 Q. Yes, I see.
 3 A. — or queried.
 4 Q. If a fire strategy was provided but it wasn't complete,
 5 if it said, for example, that a particular analysis
 6 would be confirmed in a later issue of the report, would
 7 you expect the reasonably competent cladding contractor
 8 to pick up on that and ask whether there was a final
 9 version of the fire strategy?
 10 A. Yes. I would expect any member of the project team to
 11 pick up on that.
 12 Q. Yes. Yes.
 13 Now, I'm going to ask you some questions now about
 14 the BBA certificate for the Reynobond 55 ACM panels.
 15 Just as a general proposition, to what extent would
 16 you expect the reasonably competent cladding contractor
 17 to rely on information in a BBA certificate about, say,
 18 the fire performance of a particular product?
 19 A. I would expect them to rely on it to a great extent,
 20 because the BBA is considered a reputable body and their
 21 certificates generally to be trusted.
 22 Q. Yes. So if you could just encapsulate for us, what was
 23 the reputation of the BBA and their certificates within
 24 the cladding industry during the relevant period, 2012
 25 to 2017? How would you describe the reputation that BBA

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1 certificates had?

2 A. It was a good reputation.

3 Q. Yes.

4 If we look at page 49 of your report

5 {JOS00000001/49}, paragraph 12.1, I just want to look at

6 the first four lines of that.

7 You're being asked about the understanding by the

8 cladding industry of fire test evidence, and to what

9 extent was it common within the cladding industry to be

10 requesting fire test evidence from manufacturers or

11 suppliers of cladding products, and at 12.1 you say:

12 "Specialist contractors or their cladding designers

13 would normally have referred to the manufacturers'

14 technical literature and/or relevant certification for

15 the products they were considering. Such certification

16 would have included, for example, BBA or LABC

17 certification."

18 Now, you say that specialist contractors would

19 normally have referred to the manufacturer's technical

20 literature and/or relevant certification.

21 If the reasonably competent cladding contractor was

22 aware that a product held certification from the BBA or

23 the LABC, for example, would you expect them to review

24 those certificates as part of its assessment of the

25 product?

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1 A. Yes, I think I've said elsewhere, in general I would

2 expect the contractor as a whole to accept that

3 certification, but I would expect their technical

4 department to look at it a little bit more closely.

5 Q. Yes. So just —

6 A. To examine the details of the certificate, that's what

7 I mean.

8 Q. Yes.

9 A. Yes.

10 Q. Yes.

11 Just staying with this paragraph and carrying on,

12 picking it up in the fourth line, so this is 12.1, you

13 say:

14 "These certificates in turn may have given relevant

15 BS, EN or fire test references and strictly the cladding

16 contractor or their designers should have looked at this

17 background information. However, in my view, most

18 cladding contractor/designers would have regarded the

19 BBA or LABC as an authority, and they would have been

20 content to rely on the certificates, without going back

21 to the source data, provided of course that they (the

22 contractors) were mindful of any caveats included on the

23 certification."

24 Now, in section 13 of your report — we don't need

25 to turn to it — you've identified a number of important

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1 features concerning the BBA certificate from 2008 for

2 the Reynobond panels. I'm just going to summarise some

3 of the features you've identified.

4 For example, you've identified that the first page

5 of the certificate gives the impression that the product

6 has class 0 without qualification. That's one of the

7 points you've made. But you go on to explain that

8 section 6 of the certificate on fire performance

9 contains much technical detail which requires

10 significant analysis in order to obtain a clear

11 understanding of what exactly the fire properties are of

12 the product. Is that fair?

13 A. Yes.

14 Q. A fair summary? Yes.

15 A. By the way, I still have section 12 up on the screen

16 here.

17 Q. Yes, sorry, if we can just turn to section 13, so

18 I think it's the next page or the page after, if we go

19 to page 50 {JOS00000001/50}. Yes, here it is.

20 You have also said that it was not clear exactly

21 what was covered by the certificate and whether that

22 included the whole cassette system or the subframe

23 supporting it, and you have said that at the very least

24 that ambiguity about whether the certificate covered the

25 cassette panels should have led a cladding contractor to

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1 raise that question with Arconic; yes?

2 A. Yes.

3 Q. Now, in those circumstances, and particularly given what

4 you have said about the important limitations contained

5 in section 6 of the certificate, would it have been

6 necessary, do you think, to consider the underlying

7 source tests and test data in order for someone to fully

8 understand the fire performance of the product and in

9 order to understand the certificate and its limitations?

10 A. Yes, I think the question should have been asked. I'm

11 not saying that the cladding contractor should

12 themselves have necessarily interrogated the test data,

13 but at least they should have had a dialogue with the

14 manufacturer to find out what background information

15 there was to the certificate.

16 Q. Yes. Yes, so that the true nature of the product's fire

17 performance could be ascertained.

18 A. Yes.

19 Q. Yes.

20 If we go now to paragraph 13.3 of your report at

21 page 50 {JOS00000001/50}, I think this is where you're

22 dealing with the point about who should have read which

23 bits of the certificate, and you say:

24 "In my opinion, most members of a cladding

25 contractor's staff would have been content to see that

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1 a product was covered by a BBA certificate and would
2 probably not have read the details on that certificate."

3 But then you go on:

4 "However, those members of the cladding contractor's
5 staff with technical or design responsibility would be
6 expected to be more familiar with the details of the
7 certificate and I would expect them to have read it in
8 greater detail."

9 Just to be absolutely clear, is it your opinion that
10 the reasonably competent cladding contractor would
11 ensure that somebody with technical or design
12 responsibility had read any relevant BBA certificate in
13 detail to ensure that the product was appropriate for
14 its intended use on a project?

15 A. Yes.

16 Q. And that would involve reading the whole of the
17 certificate in its entirety, not just any summary on the
18 front; yes?

19 A. Yes.

20 Q. Then you go on to say at 13.5 on that same page:

21 "In my opinion, [you're talking about the
22 certificate] this is misleadingly drafted, in that it
23 gives the impression that the product has a Class 0
24 rating, without qualification. However, on turning to
25 Section 6, it is apparent that this contains vital

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1 information about the details and limitations of the
2 fire testing carried out. I consider that a reasonably
3 competent cladding contractor should have read Section 6
4 in full. Had they done so, they would have been alerted
5 to the fact that the BBA certificate was very specific
6 in its scope."

7 Now, in your opinion, would it be incumbent upon
8 those members of staff with technical or design
9 responsibility to alert other employees within the
10 cladding contractor's staff about the certificate's
11 limited scope, if they had appreciated that?

12 A. Yes.

13 Q. Would it also be incumbent upon the reasonably competent
14 cladding contractor to alert other third parties to the
15 limitations of the certificate, if it had been read
16 properly --

17 A. Yes.

18 Q. -- for example --

19 A. Sorry.

20 Q. Sorry. For example, the main contractor on the project?

21 A. Yes.

22 Q. The architect?

23 A. Yes.

24 Q. The fire engineer?

25 A. Well, they would -- yes, I would imagine not so much

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1 alerting the fire engineer, but they might have been
2 brought into the discussion of what to do about it.

3 Q. Yes.

4 A. Yes.

5 Q. What about the building control officers responsible for
6 approving the project?

7 A. Yes, although one would have thought that they'd resolve
8 it as a team in-house first before going to the
9 building control.

10 Q. Yes. But let's assume they haven't resolved it in-house
11 but then someone realises the certificate has these
12 limitations. In those circumstances, would you expect
13 it to have been raised with building control and the
14 question asked: what building control thought about
15 those limitations?

16 A. Yes.

17 SIR MARTIN MOORE-BICK: Can I just ask: would you expect the
18 cladding contractor to do that himself or would you
19 expect him to alert another member of the team who could
20 be expected to approach building control?

21 A. That's a fair point. I mean, I'm not talking about the
22 logistics of this so much. I think the way this sort of
23 thing would have happened is that a discussion would
24 take place between the specialist contractor and the
25 main contractor and the architect, and they'd come to

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1 a conclusion about what to do, and they'd decide which
2 of them should approach who, and that's how it would go,
3 and it wouldn't necessarily be the specialist doing that
4 approach. You're right, I mean, if it's
5 building control, it would probably be the architect.

6 SIR MARTIN MOORE-BICK: Then there could be an interesting
7 question if the line that the main contractor wanted to
8 take was not one which the subcontractor was entirely
9 happy with.

10 A. Exactly. So, yes, that's why they'd have to agree as
11 a team first before they made any approach to
12 building control.

13 SIR MARTIN MOORE-BICK: Yes, all right, thank you very much.

14 MS GRANGE: Yes, thank you.

15 Now, sticking with the BBA certificate, if we go to
16 page 51 {JOS00000001/51}, just one page on within
17 section 13, to 13.8, one of the specific points you've
18 picked up on is that:

19 "... clause 6.4 of the certificate states 'These
20 performances may not be achieved by other colours of the
21 product', and goes on to say that, if another paint
22 finish is used, the designations for a particular colour
23 should be confirmed by 'test or assessment in accordance
24 with Approved Document B, Appendix A, Clause 1'."

25 And you say:

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1 "This clause broadly requires further testing and
2 assessment by suitably qualified specialists."

3 Now, is that an example of the kind of detail that
4 you would have expected members of staff with technical
5 or design responsibility within the cladding contractor
6 to pick up on?

7 A. Yes. I would imagine they would have gone back to the
8 manufacturer and said, "Well, what does this mean?
9 We're planning to use colour X and the certificate is
10 for colour Y, what are the implications?" —

11 Q. Yes.

12 A. — you know.

13 Q. Yes. And those are the steps you think a reasonably
14 competent cladding contractor should have taken once
15 they realised and appreciated that the colour panel they
16 were proposing was not covered by the certificate?

17 A. Yes.

18 Q. Yes.

19 A. By the way, it's not only about colour, it's about the
20 paint type as well.

21 Q. Yes.

22 A. Yes.

23 Q. Yes.

24 You say at paragraph 13.9 of your report on that
25 same page, you say:

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1 "I also note that the mention in Section 6.2 of the
2 BBA certificate of the existence of the FR—cored ACM
3 product, which appears to achieve National Class 0, as
4 required, would at the very least have informed
5 a cladding contractor that an FR—rated version of the
6 product was available."

7 Now, would you agree that the reasonably competent
8 cladding contractor during the relevant period should
9 have been aware in any event that many major
10 manufacturers, for example Alucobond, were manufacturing
11 FR variants as at 2013/2014? Should they have known
12 that in any event, regardless of what was said in this
13 specific BBA certificate?

14 A. I don't know. I'm sorry.

15 Q. No, that's fine.

16 Did there come a time when FR metal composite panels
17 were widely known to be available in the UK market?

18 A. Sorry, I missed the first part of that.

19 Q. Yes, did there come a point when FR metal composite
20 panels were widely known to be available in the UK
21 market?

22 A. I can't give you a date for that, I'm afraid.

23 Q. Are you aware that in the middle of 2013 some cladding
24 panel manufacturers stopped promoting ACM panels with
25 an unmodified polyethylene core and/or more actively

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1 promoted their ACM panels with a fire resistant core in
2 response to safety concerns generated by the UAE
3 cladding fires?

4 A. Yes.

5 Q. Given the functional requirement in B4(1) and the fact
6 that the PE panel did not on a close reading of the
7 BBA certificate in fact achieve national class 0, do you
8 agree that the reasonably competent cladding contractor
9 should have been considering an FR panel as a minimum
10 level of fire performance in any event?

11 (Pause)

12 A. There seemed to be two questions there, I think.

13 Q. Yes, I'm sorry. Let's take the functional requirement.
14 Given the functional requirement, do you agree that the
15 reasonably competent cladding contractor should have
16 been considering an FR panel as a minimum level of fire
17 performance in any event?

18 A. In answer to your question, as far as I understand it,
19 the BBA certificate showed that, within certain
20 constraints, the FR panel achieved class 0.

21 Q. Yes.

22 A. Although for particular colours, and it wasn't
23 a cassette. But that's another —

24 Q. Yes.

25 A. And in that sense, to achieve class 0, the only thing

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1 that the BBA certificate required was to use an FR—rated
2 core. Yes.

3 Q. Yes, I understand that.

4 A. That was the only thing that complied with class 0, as
5 directly tested, yes.

6 Q. Yes.

7 Would you agree that even if it was proposed that
8 an FR cladding panel might be used, any reasonably
9 competent cladding contractor would still need to verify
10 the actual fire performance of any FR product?

11 A. Yes.

12 Q. Now, at paragraph 3.10 of your report there, you say:
13 "Furthermore, I note that clause 1.1 of the
14 certificate states that 'The panels are available either
15 plain edged (riveted system) or flanged (cassette
16 system) to suit architectural requirements ... Figure 1
17 shows illustrations of both systems."

18 And we've looked at that many times, where you can
19 see the rivet system and the cassette system.

20 In your view, would a reasonably competent cladding
21 contractor expect any significant difference in fire
22 performance between these two systems, ie cassette
23 versus rivet, to be highlighted in a certificate that
24 refers to both types of system?

25 A. I'm not sure, would they expect it or would I expect it?

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1 Q. Would a reasonably competent cladding contractor expect
2 that any significant difference in fire performance
3 between the two systems would be highlighted in the
4 certificate ?
5 A. Yes, I think that would be reasonable for them to expect
6 that.
7 Q. Yes.
8 Now, if we turn to section 16 of your report on
9 page 57 {JOS00000001/57}, in this section of your report
10 you are explaining the factors which might lead to the
11 use of ACM panels with a PE core, and you tell us in
12 16.3 that ACM panels are relatively stiff panels and
13 that stiffness was an important property to enable it to
14 resist wind pressure and damage impacts. You also tell
15 us that the stiffness creates a flatter panel which is
16 architecturally more acceptable.
17 You go on to tell us at 16.4 that:
18 "ACPs contain roughly one-third the aluminium of
19 aluminium panels of the same stiffness. As aluminium is
20 relatively more expensive than the PE core, an ACP will
21 therefore be relatively cheaper than a panel of the same
22 stiffness using just aluminium."
23 Then in the next paragraph, 16.5, you say:
24 "Also, because PE has lower density than aluminium,
25 an ACP is also lighter in weight, having about

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1 two-thirds the weight of an aluminium panel of the same
2 stiffness. This makes the panels easier for operatives
3 to handle on site, which is a useful property,
4 particularly when working at height."
5 So those are some of the reasons that you've
6 explained why these aluminium composite panels may be
7 selected.
8 In addition to those reasons and in a competitive
9 environment, is another reason that ACM with a PE core
10 might be used is that it's cheaper than any other
11 composite cladding, for example it's usually cheaper
12 than a zinc composite product; is that correct?
13 A. I would imagine, yes.
14 Q. Yes, and it's usually cheaper than any FR-cored product;
15 yes?
16 A. I believe so.
17 Q. Yes.
18 Now, in the next paragraph, 16.6, you then give
19 technical factors which would lead to the ACP not being
20 selected for use. The first point you have made there
21 is:
22 "i. The PE core is combustible.
23 "ii. The panels require careful detailing to avoid
24 unsightly edges being visible.
25 "iii. The method of forming tight corners requires

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1 milling the inner aluminium sheet along the fold lines,
2 thus exposing the combustible core.
3 "iv. Some architects have a preference for
4 materials which are homogeneous, and are not keen to
5 consider composite materials."
6 Just going back to that first point, if we go back
7 a page to the technical reasons why you might not select
8 the aluminium composite panels, and (i) you have, "The
9 PE core is combustible", can you help us here, and it
10 might sound like a very simple point, but would you
11 expect the reasonably competent cladding contractor to
12 understand that PE was a thermoplastic and therefore
13 would be combustible?
14 A. I'm not sure that they would understand it from the
15 point of view of chemistry, as you've expressed.
16 I think the understanding would have come from the fact
17 that there were some known fires using this material,
18 which apparently, according to the press at least, was
19 started by people's cigarettes being discarded. I don't
20 know if that is true or not. But clearly the material
21 was quite easily ignited.
22 Q. So that much should have been understood, that it was
23 easily ignited and combustible; yes?
24 A. Yes.
25 Q. Should the potential dangers of exposing the combustible

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1 core along the fold lines have been foreseen in your
2 opinion by the reasonably competent cladding contractor?
3 A. No, I don't think so, in the sense that — I mean, it
4 may be that a fire engineer might say that's a big
5 problem and there are certain characteristics, but
6 I don't think a cladding contractor would have known
7 that.
8 MS GRANGE: No, and would the same answer —
9 SIR MARTIN MOORE-BICK: Well, I'm sorry to interrupt you,
10 Ms Grange.
11 MS GRANGE: No, that's all right.
12 SIR MARTIN MOORE-BICK: Once you're aware, if you are aware,
13 that the material in the centre of the panel is
14 combustible, one might even say highly flammable, it's
15 not a very big leap, is it, to see that the more of it
16 you expose, the greater the risk of either it catching
17 fire or, if it does catch fire, the fire propagating at
18 a greater rate?
19 A. Yes, I'm thinking — I didn't want to get too involved,
20 but when you mill away part of the line inside the panel
21 and then fold it, the two aluminium inside faces come
22 together —
23 SIR MARTIN MOORE-BICK: They do, do they?
24 A. They do come together. Therefore, it's a question of
25 what amount of the polyethylene core is exposed, and it

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1 may be that a cladding contractor, not being
 2 a fire engineer, might have looked at that and said,
 3 "Well, it's not exposing much of the core so it's
 4 probably all right".
 5 SIR MARTIN MOORE—BICK: Right.
 6 A. Or if they were not sure, of course, they could have
 7 sought help. But I wouldn't say it was automatically
 8 the case, self—evidently the case, that it was going to
 9 be a problem. It would have needed specialist advice.
 10 SIR MARTIN MOORE—BICK: Yes, all right, thank you.
 11 MS GRANGE: What about the exposed edges around the edges of
 12 the panel? So with these cassettes, even if we ignore
 13 the routing and the folding of the panel, you've got
 14 exposed edges all the way around the cassette box, and
 15 the same with the riveted panels. Would you have
 16 expected the reasonably competent cladding contractor to
 17 understand the risks of exposing those edges where you
 18 have exposed PE?
 19 A. Where it's a flat sheet, you mean, and —
 20 Q. Yes.
 21 A. — the core is exposed? Yes, I would have thought
 22 they'd understand that if the core was combustible then
 23 the exposed core would be a danger, yes.
 24 Q. Yes, yes.
 25 A. But, as I say, I don't think that understanding came so

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1 much from a consideration of the geometry or the
 2 chemistry as the fact that there had been some perfectly
 3 clear examples of where it had caught fire.
 4 MS GRANGE: Yes.
 5 Mr Chairman, I think that's a very good moment for
 6 the afternoon break.
 7 SIR MARTIN MOORE—BICK: Yes, so do I.
 8 We're going to have a short break now, Mr Sakula.
 9 We will come back at 3.35, please. Usual request:
 10 please don't speak to anyone about your evidence while
 11 you're out of the room.
 12 THE WITNESS: All right.
 13 SIR MARTIN MOORE—BICK: Thank you.
 14 (Pause)
 15 All right, 3.35, please. Thank you.
 16 (3.21 pm)
 17 (A short break)
 18 (3.35 pm)
 19 SIR MARTIN MOORE—BICK: Right, Mr Sakula, ready to carry on,
 20 I hope?
 21 THE WITNESS: Yes, thanks.
 22 SIR MARTIN MOORE—BICK: Thank you very much.
 23 Yes, Ms Grange.
 24 MS GRANGE: Yes, thank you.
 25 Now, staying with the ACM cladding panels, I now

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1 want to ask you some more questions about the selection
 2 and use of those cladding panels.
 3 If we look at page 60 of your report
 4 {JOS00000001/60}, section 17, I want to look at
 5 paragraph 17.5. So you say there:
 6 "The industry's understanding of 'Class 0' has been
 7 discussed in section 14 of the present report.
 8 I consider that a reasonably competent cladding
 9 contractor would have interpreted paragraph 12.6 of ADB2
 10 and Diagram 40 as containing all the requirements for
 11 fire performance of the cladding, namely a Class 0
 12 National classification or the related EN classification
 13 shown on Diagram 40. I do not consider that they would
 14 have thought that other aspects of fire performance of
 15 the cladding needed to apply."
 16 So that's your interpretation of paragraph 12.6 and
 17 diagram 40 of Approved Document B.
 18 So does it follow from this that it's your opinion
 19 that a composite panel with a combustible core could
 20 comply with paragraph 12.6 and diagram 40 of Approved
 21 Document B, provided the panel complied with national
 22 class 0?
 23 A. Yes.
 24 Q. Now, we touched on this earlier, and I think you agreed,
 25 but wouldn't a reasonably competent cladding contractor

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1 have been aware that the class 0 rating only applied to
 2 the external skins and not the core, ie what was being
 3 tested in national class 0 was really testing the
 4 surface or the outside of the product and not the core?
 5 A. Yes.
 6 Q. And a reasonably competent cladding contractor would
 7 have understood that; yes?
 8 A. Yes.
 9 MS GRANGE: In that regard, can we look again at the CWCT —
 10 SIR MARTIN MOORE—BICK: Well, before we do, can I just
 11 pursue this a little bit further?
 12 MS GRANGE: Yes.
 13 SIR MARTIN MOORE—BICK: Because, as I think everyone's
 14 agreed, ADB is only a guidance document.
 15 What about the actual regulation B4 that says the
 16 exterior wall must not promote the propagation of fire,
 17 or must adequately resist, I think are the actual words
 18 used.
 19 A. Yes.
 20 SIR MARTIN MOORE—BICK: Doesn't that come into play?
 21 A. Yes, it does.
 22 SIR MARTIN MOORE—BICK: The reason I ask the question is
 23 because I find it rather difficult to see that one can
 24 say as a cladding contractor, "Well, as long as it's
 25 class 0 on the outer surface, I don't have to worry

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1 about anything else". Is that what you're saying?
 2 A. I imagine that's — I have been asked what they would
 3 have thought, right? And so I imagine that's what they
 4 would have thought. Because I think that the issue
 5 is — I understand what the Building Regulation says.
 6 In the industry, ADB2 would have been considered as the
 7 document which sets out an interpretation of how the
 8 regulation should be complied with, and ADB2 was the
 9 document that probably building control officers would
 10 have referred to. So that would be considered the
 11 source document.

12 But I agree with you about what the regulation
 13 actually says, and I in fact bring it up later, that the
 14 spirit of the regulation is something different. But
 15 all I'm saying is that in terms of what they thought
 16 they needed to do, I think they would have looked at
 17 ADB2 and felt that that told them what they needed to
 18 do.

19 SIR MARTIN MOORE—BICK: Without —

20 A. Otherwise why have ADB2?

21 SIR MARTIN MOORE—BICK: Well, it's not just that, is it? It
 22 might be said that if you understand class 0 correctly
 23 that it is limited in its scope to the outer surface, it
 24 leaves open the question of the nature of the material
 25 between, in this case, the two aluminium skins, and I'm

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1 just wondering whether you're saying that, in your view,
 2 a competent cladding contractor at the time we're
 3 discussing would have felt that he could ignore that.
 4 A. Well, my view is that ADB2 didn't really acknowledge the
 5 existence of composite materials. It was silent on it,
 6 and probably should not have been, but it was silent on
 7 it, and therefore it didn't really cover it. It was
 8 an omission. And so I think people tried to use ADB2 to
 9 the best of their ability to cover a case for which it
 10 probably wasn't written, you see.

11 SIR MARTIN MOORE—BICK: So what does the competent
 12 contractor do? Does he just not worry about the
 13 substance of what he's planning to put on the building?
 14 It seems rather inconsistent with things I've read
 15 elsewhere in your report, that's all.

16 A. Sorry, is your question about: should they have
 17 considered something in addition to the requirements of
 18 ADB2?

19 SIR MARTIN MOORE—BICK: Well, I suppose my question is:
 20 should a competent contractor at the time have asked
 21 himself about the nature of the core of the ACM panels,
 22 not just their surface, and as a result have thought
 23 about the dangers inherent in using that material on
 24 certainly a building of this kind?

(Pause)

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1 A. Yes, I think they should have thought about it, and then
 2 they would have thought: well, I'm required to satisfy
 3 class 0, and what do I need to do to satisfy it? And
 4 they would have subjected their material to it.

5 The problem I have with it is that if one is to
 6 consider the core, what test would one apply? It's not
 7 set out anywhere. And that's the question that the
 8 cladding contractor would have raised.

9 SIR MARTIN MOORE—BICK: Well, the test might be a common
 10 sense test, particularly in the light of the fires in
 11 the Middle East.

(Pause)

13 A. Sorry, is that a question?

14 SIR MARTIN MOORE—BICK: Well, I'll formulate it in
 15 a different way, if you like.

16 MS GRANGE: Mr Chairman, if it helps, I'm going to come to
 17 the very bit of Mr Sakula's report that deals with this
 18 particular question in just a moment.

19 SIR MARTIN MOORE—BICK: All right. Well, perhaps I had
 20 better let you take your course.

21 MS GRANGE: I wonder whether it might help Mr Sakula to be
 22 reminded of what he's got in his written report and then
 23 we have supplemental questions.

24 SIR MARTIN MOORE—BICK: As usual, Mr Sakula, it's better
 25 that, instead of jumping in and asking questions, I let

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1 Ms Grange come to it in her own time.

2 MS GRANGE: No, no.

3 SIR MARTIN MOORE—BICK: We'll let her do that.

4 Yes, Ms Grange, on you go.

5 MS GRANGE: Yes.

6 So, just to recap, you've given your interpretation
 7 just purely looking at 12.6 and diagram 40, but you have
 8 also acknowledged that a reasonably competent cladding
 9 contractor would have been aware that the class 0 rating
 10 was testing mainly the exterior of the panels.

11 Can I just look at a couple of passages in the CWCT
 12 standards. If we look at the CWCT standard for walls
 13 with ventilated rainscreens at {CWCT0000053/45}, if we
 14 go to 2.20.3 at the top, it states there under "The
 15 rainscreen cladding":

16 "The outer skin of a wall of 'rainscreen'
 17 construction ... shall have a surface spread of flame of
 18 Class '0' rating on both faces in accordance with the
 19 Building Regulations. The two faces are the external
 20 ... panel surface and the internal ... panel
 21 surface ..."

22 So that's telling you about the class 0 for the
 23 external.

24 Then on page 46 {CWCT0000053/46}, 2.20.6 under the
 25 heading "Composite materials", it says:

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1 "When one of the rainscreen cladding elements ... is
 2 a composite of two or more materials (mechanically
 3 jointed, bonded or fused together) the individual
 4 elements, including adhesive must demonstrate the
 5 appropriate fire performance. Similarly it must be
 6 demonstrated that the composite will remain reasonably
 7 whole and not become prematurely separated from the
 8 building or framework."
 9 So we've got those passages in that standard.
 10 Then if we look at the CWCT standard for systemised
 11 building envelopes, the main CWCT standard from 2008 --
 12 A. I'd like to come back to 2.20.6, though, after you've
 13 done this, if you don't mind.
 14 Q. Why don't we deal with it now. Do you want to make
 15 a comment on that section?
 16 A. Yes, and that's two comments. I'm sorry, because you
 17 haven't actually asked the question, so maybe it's a bit
 18 unfair --
 19 Q. No, no, say what you were going to say about your
 20 interpretation of this.
 21 A. 2.20.6. I've read this and what I find -- I have
 22 a couple of difficulties with this. It says the
 23 individual elements must demonstrate the appropriate
 24 fire performance. I'm not quite sure what "the
 25 appropriate fire performance" means in that context.

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1 Q. Yes, yes.
 2 A. What is the appropriate fire performance? It's not
 3 specified.
 4 Q. Yes.
 5 A. The second point is that it says "demonstrated that the
 6 composite must remain reasonably whole and not become
 7 prematurely separated from the building or framework".
 8 If one reads BS 476-7, which is the spread of flame
 9 test, it actually similarly says that any mechanical
 10 delamination or disintegration should be recorded, but
 11 it makes a point of saying that this sort of
 12 disintegration does not affect the fire classification.
 13 It specifically says that.
 14 Q. Yes.
 15 A. So it distinguishes between mechanical disintegration of
 16 a composite and the fire classification. So that's why
 17 I find this a little bit unclear.
 18 Q. Yes, I understand.
 19 A. Okay.
 20 Q. Yes.
 21 If we look at that CWCT standard for systemised
 22 building envelopes at {CWCT0000046/13}, here we see at
 23 6.4.2.1 we've got something on surface spread of flame
 24 and external surface spread of flame. It says:
 25 "The external surface of the envelope shall satisfy

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1 the requirements for Class 0 when tested in accordance
 2 with BS 476: Parts 6 and 7 (National class) or Class B
 3 ... in accordance with ... (European class).
 4 "For rainscreen panels this requirement applies to
 5 both the visible external surface of the panel and the
 6 surface of the panel facing the cavity."
 7 So, again, it's talking about the two surfaces.
 8 A. Yes.
 9 Q. Then at 6.6.3 on page 16 {CWCT0000046/16}, it talks
 10 about composite components, and it says:
 11 "When one of the cladding elements is a composite of
 12 two or more materials (mechanically jointed, bonded or
 13 fused together) the elements as a whole, must
 14 demonstrate the appropriate fire performance."
 15 So that's the same wording, and your point there is:
 16 well, what is the appropriate fire performance?
 17 A. Yes.
 18 Q. "Similarly it must be demonstrated that the composite
 19 will remain reasonably whole and not become prematurely
 20 separated from the building or framework."
 21 Now, I think the point here is that even if it's not
 22 telling you what the appropriate fire performance is, if
 23 you read these standards, isn't it getting you to think
 24 about the fire performance of each component of your
 25 composite panel? Isn't it at least getting you to ask

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1 that question --
 2 A. Yes.
 3 Q. -- or inviting you to ask that question? Would you
 4 agree?
 5 A. Yes.
 6 Q. Going back to paragraph 12.6 and diagram 40, if we go
 7 back to page 59 of your report {JOS00000001/59},
 8 paragraph 17.4, you say there:
 9 "Clause 12.6 of ADB ... requires that 'The external
 10 surfaces of walls should meet the provisions of
 11 Diagram 40. Diagram 40 shows that surfaces on buildings
 12 should meet Class 0 for floors above 18m. I am aware
 13 that there are differing views on how 'external
 14 surfaces' is interpreted. In this context, my opinion
 15 is that a reasonably competent practitioner in the
 16 cladding industry would have an everyday interpretation
 17 of this, and would consider that a panel that met
 18 Class 0 when tested would satisfy this clause. I do not
 19 consider that they would have considered this to apply
 20 separately to the core of an ACP."
 21 So that's how you read just 12.6 and diagram 40
 22 taken on its own; is that correct?
 23 A. Yes.
 24 Q. Yes.
 25 Can you just explain what you are aware of in terms

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1 of the differing views on how "external surfaces" is
 2 interpreted? You say you're aware that there were
 3 different views on how the phrase "external surfaces" is
 4 to be interpreted. Can you just explain how you became
 5 aware of that? Was that something pre-Grenfell or
 6 post-Grenfell?
 7 A. Post-Grenfell.
 8 Q. Yes.
 9 A. I can't remember whether it's in Mr Hyett's report, but
 10 I know it's in Dr Lane's report, a view on this subject.
 11 Q. Right. Yes.
 12 You say at the end of that paragraph:
 13 "I do not consider that they would have considered
 14 this to apply separately to the core of an ACP."
 15 Can you just be clear what exactly you mean by that.
 16 When you say "this to apply", what are you referring to?
 17 Do you mean there wasn't a separate class 0 or Euroclass
 18 requirement for the core of the panel?
 19 A. Sorry, I need to look at the beginning of that
 20 paragraph.
 21 Q. Yes, sorry, if we go back to 17.4 at the bottom of
 22 page 59.
 23 (Pause)
 24 A. Go back again then.
 25 (Pause)

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1 Yes, "they" in that case refers to the contractor.
 2 Q. Yes.
 3 A. "... would have considered this to apply separately ..."
 4 Yes.
 5 Q. When you're talking about "this to apply" —
 6 A. Sorry.
 7 Q. In the very last sentence you say:
 8 "I do not consider that they [ie the reasonably
 9 competent contractor] would have considered this to
 10 apply separately to the core of an ACP."
 11 Do you mean the fire performance standards?
 12 A. The requirement to meet — well, what I mean is my
 13 understanding is that the class 0 test would have had to
 14 be applied — the testing to reach class 0 would have
 15 had to be applied to both internal and external faces of
 16 the panel, but there was no test specified for the core
 17 of the panel.
 18 Q. Yes.
 19 A. So I couldn't see how you could apply a class 0 test, or
 20 any kind of surface spread of flame test to the core of
 21 the panel.
 22 Q. Yes.
 23 Now, just moving on to 12.7 of ADB, which is the
 24 next provision, I just want to read that. If we bring
 25 this up within ADB, it's {CLG00000224/96}. There we

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1 have 12.7 "Insulation Materials/Products", and it says:
 2 "In a building with a storey 18m or more above
 3 ground level any insulation product, filler material
 4 (not including gaskets, sealants and similar) etc. used
 5 in the external wall construction should be of limited
 6 combustibility (see Appendix A)."
 7 If we look at what you say about this in your report
 8 at page 47 {JOS00000001/47}, at paragraphs 11.5 and
 9 11.6, you say this:
 10 "11.5. I consider that a cladding contractor would
 11 have considered paragraph 12.7 to refer to insulation
 12 used as part of the external façade system.
 13 "11.6. The term 'filler material' in clause 12.7
 14 is, however, unclear. I would consider that it was
 15 intended to refer to gap fillers such as expanding foam
 16 fillers. I do not think it was intended to refer to the
 17 core of an ACM panel, which I have never heard referred
 18 to as 'filler'. I also think that a reasonably
 19 competent cladding contractor or product manufacturer
 20 would have had a similar view."
 21 Can you just help us as to when you formed the view
 22 that the term "filler" was unclear? When did you reach
 23 that view? Was it when looking at the Inquiry's
 24 questions?
 25 A. Yes, although I probably looked at it — certainly when

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1 I looked at the Inquiry's questions, but I probably also
 2 looked at it previously in recent years, and I've always
 3 found it a little bit odd, that phrase.
 4 Q. Yes. Is your interpretation of the term "filler
 5 material" in that clause, is that solely based on the
 6 wording and the language used in paragraph 12.7 of
 7 Approved Document B, or have you been influenced by
 8 anything else in terms of your view of that particular
 9 wording?
 10 A. Well, could I answer that question slightly in
 11 a round-about way?
 12 Q. Of course.
 13 A. Which is: I'm aware of the fact that the — I think the
 14 Ministry of Local Government issued some post-Grenfell
 15 information which seemed to imply that filler included
 16 the core of an ACM panel, I believe.
 17 Q. Yes.
 18 A. Which I thought — frankly, I don't agree with that.
 19 I think that was, I don't know, trying to sort of —
 20 I just think that was a bit of a stretch, a linguistic
 21 stretch, really, since clause 12.7 was about insulation,
 22 not about cladding.
 23 Q. Yes.
 24 A. I believe there may have been a conference in Oxford,
 25 2019, where there was a presentation given, and

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1 I probably referred to that, which also discussed this
 2 topic. But that view all went towards informing my
 3 view.
 4 MS GRANGE: Yes.
 5 SIR MARTIN MOORE—BICK: Can I just — sorry to keep
 6 interjecting.
 7 MS GRANGE: No, no, please do.
 8 SIR MARTIN MOORE—BICK: Of course it's very interesting for
 9 us to know how you would interpret this, but I think
 10 what we would really benefit from is your evidence, if
 11 you're able to give any, about how this provision was
 12 widely understood in the cladding industry at the time.
 13 Are you able to help on that?
 14 A. Yes, I think so. I sincerely believe that the term
 15 "filler material" in the context of clause 12.7 would
 16 have been interpreted as insulation or things acting as
 17 insulation, and I've mentioned foam fillers,
 18 for example, you know, sprayed out of a can.
 19 SIR MARTIN MOORE—BICK: Yes, but not to extend to the core
 20 of a composite panel?
 21 A. No.
 22 SIR MARTIN MOORE—BICK: Thank you very much.
 23 MS GRANGE: Yes.
 24 So to encapsulate your view, your view is that
 25 clause 12.6 is silent about the fire performance of the

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1 ACM core, and your view is that paragraph 12.7 doesn't
 2 help on that question either because that's not dealing
 3 with the core of an ACM panel; is that correct?
 4 A. Yes.
 5 Q. Yes.
 6 Now, if we then go to page 59 of your report
 7 {JOS00000001/59}, and look at section 17, this is headed
 8 "Sufficiency of Class 0 in selecting Reynobond ACM PE
 9 panels", but you were asked a key question here, and I'm
 10 just going to read the question, so:
 11 "The Inquiry would be grateful if you would answer
 12 the following question as part of your discussion of
 13 Diagram 40 in ADB2: At the time the cladding was being
 14 selected for the Grenfell Tower project ... was Class 0
 15 enough to select Reynobond ACM PE panels (assuming there
 16 was a BBA Certificate which clearly confirmed they were
 17 Class 0) ..."
 18 Now, we know your evidence is there wasn't
 19 a BBA certificate that clearly confirmed that, but
 20 leaving that aside, was class 0 enough, and then you're
 21 asked was it enough given:
 22 "(1) what a reasonably competent cladding contractor
 23 should have understood class 0 to relate to;
 24 "(2) given what is said in paragraphs 12.5 to 12.9
 25 of ADB2 (including the warning in paragraph 12.5 and

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1 what is said/shown in 12.6 and Diagram 40);
 2 "(3) given what was said in other industry guidance
 3 [and we've looked at some of that]; and
 4 (4) given what should have been known about PE and
 5 its properties and its role in international cladding
 6 fires?"
 7 So it's really asking you, you know, aside from what
 8 you see in ADB, given other factors, to what extent was
 9 class 0 enough?
 10 I just want to be clear what you've said in writing
 11 about that.
 12 If we go to paragraph 17.5 on page 60
 13 {JOS00000001/60} and pick it up there, you have told us
 14 in that paragraph, and we've just looked at it, what
 15 a reasonably competent cladding contractor would have
 16 interpreted paragraph 12.6 of ADB and diagram 40 to
 17 mean, and then at 17.6 you've said:
 18 "Relevant other industry guidance during the period
 19 in question has been discussed in section 10 of the
 20 present report. Of these documents the most relevant
 21 would be the BCA's TGN 18, published as Issue 0 in
 22 June 2014 and Issue 1 in June 2015."
 23 Then at 17.7:
 24 "It is of note that both versions of TGN 18 give
 25 a broader interpretation of the applicability of

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1 'limited combustibility' materials than that stated in
 2 ADB2. While 'limited combustibility' is stated in
 3 paragraph 12.7 of ADB2 to apply only to insulation
 4 materials, TGN 18 states that the term applies for 'all
 5 elements of the cladding system', if the 'linear route'
 6 to compliance is being followed. This would have
 7 precluded the use of ACPs for cladding buildings with
 8 a floor higher than 18m above ground level, unless
 9 a successful fire test or desk-top study were carried
 10 out."
 11 Then you go on:
 12 "TGN 18 provided guidance to Building Control
 13 Officers and others on how the requirement of ADB2
 14 should be interpreted. At the very least I would
 15 therefore expect a Building Control Officer to be aware
 16 of its contents."
 17 Picking it up at 17.9 you say:
 18 "It is clear that there was a mismatch between what
 19 was stated in ADB2 and what was stated in TGN 18. Both
 20 of these documents act as 'guidance' and in the end the
 21 Building Regulations themselves carry the greatest
 22 weight."
 23 17.10:
 24 "With reference to earlier clauses 8.1.1 and 9.4 of
 25 the present report, I consider that a reasonably

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competent cladding contractor or manufacturer would have been aware of the combustibility of PE-cored ACPs, particularly after the UAE fires. However, in my opinion they would nevertheless have deferred to the guidance given in ADB2. Therefore, while ADB2 section 12 remained unchanged, and was silent about the use of ACPs, a cladding contractor would have interpreted this that the use of ACPs was still allowed."

Then you go on over the next page:

"I note, however, that ADB ... is not itself the Building Regulations and that the 2010 Building Regulation B4 ... itself states:

"The external walls of the building shall adequately resist the spread of fire over the walls ..."

Then the final paragraph, 12.17:

"Therefore, I consider that the use of PE-cored ACP for cladding a building with a floor higher than 18m above ground was unwise, given the known combustibility. In such circumstances, I consider that failure to consider adequately the combustibility of the materials would fall below the standard expected of a reasonably competent practitioner in the cladding industry. This would apply even more so to a situation where such

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materials were being proposed as a cost saving measure, where it would be essential to verify whether the cheaper product would perform adequately by comparison with the product for which it was being substituted."

Focusing on that last paragraph for a moment, where you say that the use of PE-cored ACM for use on a building above 18 metres was unwise and that the failure to consider adequately the combustibility of the materials would fall below the standard expected of a reasonably competent practitioner in the cladding industry, can you help us: what, in your opinion, would constitute adequate consideration of the combustibility of the panels, in your view?

A. That was a very long question.

Q. Yes. So, I mean, you've said that if you failed to consider adequately the combustibility of the materials, that would fall below the relevant standard.

A. Yes.

Q. What would adequate consideration look like, can you help us with that?

A. Yes. My view is that I just don't think it was sensible to use these kind of ACM on a tall building, and I think what they should have done is thought: well, let's look in more detail at fire retardant core variants of the ACMs, if we're going to use ACMs.

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Q. Yes. So I think what you're saying, and to go back to the Chairman's question just a few minutes ago, is that regardless of what we see in ADB and the fact that that's silent and, perhaps on one view, allows you to use those panels, a common-sense, sensible approach would be not to use those panels given everything else that was known at this time, including their role in those international cladding fires; is that your evidence?

A. Yes.

Q. Yes.

Can we be clear, therefore, that a reasonably competent cladding contractor should have carefully considered whether ACM PE cladding panels were suitable for use on a high-rise residential building, given the combustibility of such panels and their propensity to propagate the spread of fire?

A. Yes, and I would add to that, not only the cladding contractor's responsibility, this issue, it's all parties involved.

Q. Yes, so the architect, the main contractor ...

A. The building control officer.

Q. Yes.

A. The manufacturer.

Q. And do you agree, therefore, that a reasonably competent

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cladding contractor should have ensured that other construction professionals involved in the project were aware or were made aware of the combustibility of PE-cored ACM panels and the hazards of using such panels?

A. Sorry, your question is: were they made aware?

Q. No, should a reasonably competent cladding contractor have made other construction professionals aware of those hazards? So not only that they appreciated them, but should they have then made others aware of those hazards?

A. Yes.

Q. Again, would that include telling the main contractor, the architect, the building control officer?

A. Yes, but I'm not only talking about who they should have told. What I was implying — I understand your question, but I would say it wasn't only the cladding contractor's responsibility to do this. There were many people involved.

Q. Yes, I understand.

Do you agree that it would be especially important for a cladding contractor to make other construction professionals aware of the combustibility and hazards of PE-cored ACM panels if the cladding contractor was itself proposing that such panels be specified and used

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1 on the project?

2 A. I'm sorry, could you repeat the question?

3 Q. Yes. On the assumption that it's the cladding

4 contractor that is actually proposing the use of ACM PE

5 panels —

6 A. Yes.

7 Q. — would you agree that it was particularly important

8 that that cladding contractor informed others of the

9 hazards of using those panels?

10 A. Yes, because it was they who were proposing it as

11 a cost-saving alternative, yes.

12 Q. Yes.

13 Do you agree that any reasonably competent cladding

14 contractor carrying out such an overcladding project

15 should have ensured that the building control officers

16 responsible for approving the construction works knew of

17 the nature and make of the panels used so as to be in

18 a position to satisfy themselves about the suitability

19 of those panels?

20 A. That who should be — I got the last part of the

21 question, but who —

22 Q. Should the cladding contractor have been responsible for

23 making sure that the building control officers were

24 aware of the nature and the make of the panels?

25 A. Yes, I think so, yes, but, as we were talking about

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1 earlier, I understood that it was the architect's

2 responsibility to co-ordinate building control approval,

3 so it wasn't — they had responsibility too to do that.

4 Q. Yes.

5 Taking into account what was known about the risks

6 associated with PE-cored ACM, do you think that

7 a reasonably competent cladding contractor ought to have

8 sought confirmation or verification about the use of

9 such panels from a suitably qualified professional such

10 as a façade consultant or façade engineer?

11 A. Yes, except I would also say that there were parties

12 involved in the team who could have provided similar

13 advice, for example there was a fire consultant,

14 although their appointment was a little bit ambiguous —

15 Q. Yes.

16 A. — by that point, but there was a fire consultant on the

17 project who they could have asked. It wasn't only

18 a façade engineer. Or they could have raised it further

19 and more forcefully with the main contractor or the

20 architect.

21 Q. Yes.

22 Do you agree that where the specification or

23 contract for a cladding project expressly required

24 compliance with fire performance with a standard that

25 went beyond the requirements of ADB, any reasonably

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1 competent cladding contractor would comply with those

2 additional or more strenuous requirements?

3 A. It's a difficult one, because it comes back to this

4 question of the hierarchy and which requirements carry

5 more weight.

6 Q. Well, let me give you a specific example.

7 If we look at the CWCT standard for systemised

8 building envelopes, the main CWCT standard, and if we

9 can go to that at {CWCT0000046/11}, at 6.2 we can see,

10 fourth paragraph down under "General", it says:

11 "The building envelope shall not be composed of

12 materials which readily support combustion, add

13 significantly to the fire load, and/or give off toxic

14 fumes."

15 Now, focusing on the first parts of that sentence,

16 just assume that that CWCT standard is part of the

17 contractual requirements.

18 A. Yes. Then in that case —

19 Q. Do you think that, in those circumstances, this

20 effectively should have overridden anything that was

21 contained in ADB and meant that you didn't use ACM PE

22 materials?

23 A. It does read like that, and it does appear to override

24 it, yes.

25 Q. Yes. Because can we agree that, as demonstrated by the

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1 UAE cladding fires, it was apparent to the cladding

2 industry that PE-cored ACM cladding panels did readily

3 support combustion and would add significantly to the

4 fire load in any fire involving a cladding façade

5 constructed of such panels?

6 A. Yes.

7 Q. So, again, just to be clear, can we agree that any

8 reasonably competent cladding contractor carrying out

9 a project which required compliance with this particular

10 standard would have appreciated that PE-cored ACM should

11 not be specified or used on that project?

12 A. Yes.

13 Q. Would reading that part of the CWCT standard have led

14 the reasonably competent cladding contractor to instead

15 use FR-cored panels to ensure that it didn't contribute

16 to the fire load?

17 A. Yes.

18 Could I just make an observation? It's interesting,

19 because this statement made seems to imply all building

20 envelopes, regardless of the height of the building. So

21 even if you had a single-storey building, this would

22 apply —

23 Q. Yes.

24 A. — which seems every so slightly onerous.

25 Q. Right.

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1 A. Because we are talking about a tall building here, and
 2 ADB2 would suggest that different considerations apply,
 3 but this seems to apply for any height of building,
 4 including a garden shed. So there we are.
 5 Q. You talked in your report, and we read it a moment ago,
 6 about this mismatch between CWCT Technical Note 73 and
 7 ADB, and you also refer, if we go to page 43 of your
 8 report now {JOS00000001/43}, paragraph 10.49, to a later
 9 CWCT note from April 2017 which updated Technical
 10 Note 73, and that was Technical Note 98 which, as you
 11 have explained there, was even more specific than
 12 Technical Note 73 in its statements about
 13 combustibility, and you have set out there the relevant
 14 clause, which includes the phrase, or the last sentence
 15 of that:
 16 "Therefore where a building has a storey 18m or more
 17 above ground level all significant materials should be
 18 of limited combustibility ..."
 19 So you have made the point that that was even
 20 clearer, that there was this mismatch between ADB and
 21 this technical note.
 22 So just to be clear, there was also a mismatch
 23 between the CWCT Technical Note 98 and ADB, wasn't
 24 there?
 25 A. Correct.

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1 Q. Now, considering your view that the Building Regulations
 2 themselves, ie the functional requirements, carrying the
 3 greatest weight — we saw that in section 17 of your
 4 report — do you consider that the reasonably competent
 5 cladding contractor, taking into account that functional
 6 requirement, taking into account the warnings in
 7 industry guidance, including BR 135 and the CWCT, and
 8 taking into account the UAE fires, would have considered
 9 that PE-cored ACM panels complied with the functional
 10 requirement B4 or did not comply?
 11 A. I think they did comply with the functional requirements
 12 of B4, but they didn't comply with other industry
 13 guidance.
 14 Q. Why did it comply with functional requirement B4, ie the
 15 requirement to adequately resist the spread of fire over
 16 the walls?
 17 A. Because as I said earlier, I believe that statement in
 18 B4, in 12.5, is an introductory statement which is then
 19 fleshed out by further detail, and I think that further
 20 detail would have been given more weight than the
 21 original introductory statement.
 22 Q. But I think there is a difference between what you see
 23 in B4, the functional requirement itself, from the
 24 Building Regulations —
 25 A. Oh, sorry, you're talking about the Building Regulation,

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1 not ADB2?
 2 Q. Yes.
 3 A. Sorry. Could you ask the question again, please?
 4 Q. Of course.
 5 So considering your view that the
 6 Building Regulations carry the greatest weight, that's
 7 the function requirement —
 8 A. Yes.
 9 Q. — adequately resists the spread of fire across the
 10 walls —
 11 A. Yes.
 12 Q. — and given the warnings we've seen in other industry
 13 guidance and the UAE fires, would a reasonably competent
 14 cladding contractor have considered that PE-cored ACM
 15 panels complied or did not comply with that functional
 16 requirement?
 17 A. No, I think they would have — they should have
 18 considered that it did not comply.
 19 Q. Yes.
 20 Should the reasonably competent cladding contractor
 21 have gone further than just considering the
 22 combustibility of ACM panels and, in your view, also
 23 concluded that ACM PE was unsafe to use on high-rise
 24 buildings?
 25 A. That what was unsafe to use?

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1 Q. ACM PE was unsafe to use on high-rise buildings.
 2 So in your report you've said that a reasonably
 3 competent cladding contractor would have considered the
 4 combustibility of ACM.
 5 A. Yes.
 6 Q. At least thought about it. What I'm suggesting is that
 7 in fact would a reasonably competent cladding contractor
 8 have gone further and concluded that ACM PE was unsafe
 9 to use on high-rise buildings?
 10 A. Yes.
 11 MS GRANGE: Yes. Thank you.
 12 SIR MARTIN MOORE-BICK: Can you help me with this: are you
 13 actually aware from your own experience or from your
 14 involvement in the industry of situations in which ACM
 15 panels with a PE core were rejected because they were
 16 thought not to comply with Building Regulation B4?
 17 A. No, I'm not aware of any situations like that.
 18 I have to say, I haven't had experience of
 19 specifying or using these panels, so I'm not really so
 20 much involved in that part of the industry, so I'm not
 21 aware of that.
 22 SIR MARTIN MOORE-BICK: All right, thank you.
 23 MS GRANGE: Mr Chairman, thank you. I've come to the end of
 24 my prepared questions, so if we could have the usual
 25 break at the end of the day just to see if there are any

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1 other questions —
2 SIR MARTIN MOORE—BICK: Yes.
3 MS GRANGE: — that would be great.
4 SIR MARTIN MOORE—BICK: Now, Mr Sakula, you may already know
5 this, but when we get to the end of counsel's questions,
6 we have to have a bit of a pause so that she can check
7 whether anything has been left out, and also in case
8 those who are taking part remotely want to suggest
9 further questions to put to you.
10 We will break now until 4.35, and then we will see
11 if there are any more questions for you.
12 THE WITNESS: Thank you.
13 SIR MARTIN MOORE—BICK: Thank you very much.
14 (Pause)
15 Well, 4.35, then, please. Thank you.
16 (4.22 pm)
17 (A short break)
18 (4.35 pm)
19 SIR MARTIN MOORE—BICK: Well, now, Mr Sakula, we'll find out
20 if there are any more questions for you.
21 THE WITNESS: Right.
22 SIR MARTIN MOORE—BICK: Yes, Ms Grange.
23 MS GRANGE: Mr Chairman, no, we have no further questions
24 for Mr Sakula. So it just comes to the point where we
25 have to thank you immensely for all the hard work you

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1 have put into this report and all the assistance you
2 have provided us. So thank you.
3 SIR MARTIN MOORE—BICK: Certainly I would echo that on
4 behalf of all of us on the panel. It has been a long
5 day, and I hope you haven't found it too tiresome, but
6 we found it very interesting and very helpful to hear
7 what you have to tell us, and of course we have the
8 benefit of your report, for which we are very grateful
9 as well.
10 So thank you very much indeed for making yourself
11 available to help us, and that's all we have for you, at
12 least for today.
13 THE WITNESS: Thank you.
14 SIR MARTIN MOORE—BICK: Thank you very much.
15 MS GRANGE: Thank you.
16 (The witness withdrew)
17 SIR MARTIN MOORE—BICK: Good, thank you very much,
18 Ms Grange.
19 MS GRANGE: Thank you.
20 SIR MARTIN MOORE—BICK: That's it for today.
21 MS GRANGE: Yes, thank you.
22 SIR MARTIN MOORE—BICK: Tomorrow we have another witness
23 from the TMO, I think.
24 MS GRANGE: I think that's right, from Module 3. Yes, thank
25 you.

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1 SIR MARTIN MOORE—BICK: All right. Thank you very much.
2 10 o'clock tomorrow, then, please.
3 (4.40 pm)
4 (The hearing adjourned until 10 am
5 on Thursday, 6 May 2021)
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