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

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?

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

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

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

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

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

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

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

A. Yes.

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

A. Yes.

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

A. Yes.

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

A. Yes, it does.

Q. Thank you.

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

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

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

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

A. Yes.

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

A. Yes.

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

A. Yes.

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

A. Yes.

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

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

Q. Yes, thank you.

While at Buro Happold, you were also responsible for

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

A. East Asian.

Q. Sorry, East Asian, sorry.

A. Yes, that's correct.

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

A. Yes.

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

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

Q. Right, yes, thank you.

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

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

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

A. Yes.

Q. Yes.

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

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

London."
Can you help us, approximately when was that project? When did that take place?
A. Approximately 1993.
Q. And can you help us, was that tower block over 18 metres?
A. Yes.
Q. Yes.
A. It was 20 storeys.
Q. Was that a refurbishment or a new-build project?
A. It was a refurbishment.
Q. Can you recall what overcladding materials were used?
A. Yes, they were aluminium panels.
Q. What type of aluminium panels? Were they aluminium composite panels or pure aluminium panels?
A. Pure aluminium panels, yes.
Q. Did the project involve the installation of insulation and cavity barriers behind the panels?
A. Yes.
Q. Can you remember what type of insulation was installed?
A. I'm pretty sure it was mineral wool.
Q. Right, yes. And what was your particular role in relation to that overcladding project?
A. I was effectively leading our small team as the façade consultant to the Borough of Hackney.

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

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

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

UK façade markets by these mainland European countries? Were there particular factors, circumstances, which led to that penetration of the market?
A. It's interesting, the impression I have is that they were technically stronger, but of course this was before the time when I started my own work as a façade consultant, so I was looking -- I'm looking back --
Q. Yes:
A. -- prior to that. But the impression I got is that they were technically stronger and they started to dominate the market in the UK for projects which required that higher level of technical excellence.
Q. Yes.
When you tell us in that second sentence that I read that the design and technical staff from these countries had a relatively high level of technical education, what level of education are you referring to there?
A. Well, the sort of -- the tradition in Europe, countries like Germany, say, they had the tradition of technical high schools with a pretty good level of technical engineering type of education, probably better than Britain at that time.
Q. Yes.
A. And that's what I'm referring to.
Q. Yes.

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

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

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

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

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

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

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

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

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

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

Q. Right, yes.
Would you expect the reasonably competent cladding contractor to have enough technical knowledge to be able to interrogate a manufacturer's claims about the fire performance of its products?
A. Could you repeat the first part of that question?
Q. Yes. Would you expect the reasonably competent cladding contractor to have enough technical knowledge ——
A. Yes.
Q. —— to be able to interrogate a manufacturer's claims about the fire performance of its product?
A. Yes, although I would qualify that by saying that if the proposed usage fitted perfectly with the literature provided by the manufacturer ——
Q. Yes.
A. —— I wouldn't expect them to question it.
Q. Yes.
A. But I would expect them to question it if they were proposing something that was different, or even slightly different, from that being proposed for which the technical information applied.
Q. Yes.
What about a reasonably competent cladding contractor, would you expect them to be able to pose appropriate questions to be able to fully understand

a product's fire performance?
A. Yes.
Q. Yes.
Would you expect a cladding contractor to have a deeper knowledge and understanding about the fire performance of a particular product if that contractor had significant experience of working with a particular cladding product?
A. Yes.
Q. Would you expect them to have a deeper knowledge and understanding about the fire performance of a particular product if they'd designed and installed systems containing such material on several occasions before?
A. Yes.
Q. Yes, thank you.
Now, just some general questions now about how the reasonably competent cladding contractor would have interpreted the Building Regulations and the guidance in Approved Document B in the period we're looking at between 2012 and 2017.
Later in my questioning I will be asking you some more specific questions about particular elements of the cladding system at Grenfell Tower, including the ACM and the insulation, with reference to the regulatory framework, but at this stage these are more general

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

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

that any reasonably competent cladding contractor would have known and understood the fundamental importance of complying with the fire safety requirements concerning the design and construction of an external cladding façade as set out in the Building Regulations and Approved Document B?
A. They would have understood the importance of, did you say?
Q. Yes, the fundamental importance of ——
A. Yes.
Q. —— complying with that.
A. Yes, yes, absolutely.
Q. Sorry, it's a very general but important question.
A. Yes.
Q. Would a reasonably competent cladding contractor expect that if they complied with Approved Document B, then that would ensure compliance with the functional requirements in the Building Regulations?
A. Yes.
Q. Did you yourself ever have experience in any of the projects you worked on of the guidance in approved documents, perhaps in any of them, whether ADB or any of the other guidance documents, becoming out of date compared with good industry practice?
A. Yes, I suppose —— as I said earlier, the sense I had was

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

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

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

Q. Do you agree that the reasonably competent cladding contractor ought to have been familiar with section 9 of Approved Document B, which deals with concealed spaces/cavities, as well as section 12 of ADB, as both were relevant and applicable to the design and construction of an external cladding façade?
A. Yes.
Q. Just some questions now about Approved Document B and the routes to compliance within that document.
If we could turn first to section 9 of Approved Document B, which is at {CLG00000224/82}. So this is section 9 that I was just referring to dealing with concealed spaces/cavities. It's under the B3 section of Approved Document B under the internal fire spread section.
We can see there that paragraph 9.1 begins:
"Concealed spaces or cavities in the construction of a building provide a ready route for smoke and flame spread. This is particularly so in the case of voids in, above and below the construction of a building, e.g. walls, floors, ceilings and roofs. As any spread is concealed, it presents a greater danger than would a more obvious weakness in the fabric of the building."
Now, would you expect that the reasonably competent cladding contractor would be aware of the warnings that

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

guidance as to where cavity barriers —— if we can just scroll down the page and look at diagram 33 in its entirety. Yes, so here we've got guidance within this document about the location of cavity barriers. We can see that that guidance includes, can you see it says on the left, "Close around openings", and you've got grey shading in the cavity there, and also "Close top of cavity" further up that wall line. Do you see that?
A. Yes.
Q. If we read on to paragraph 9.3 on the following page {CLG00000224/83}, we can see that it states there that:
"Cavity barriers should be provided to close the edges of cavities, including around openings."
Do you see that?
A. Yes.
Q. So, again, would you expect that the reasonably competent cladding contractor ought to have been aware of the guidance in diagram 33 and paragraph 9.3 about the need for cavity barriers to close, including around openings?
A. Yes.
Q. Also, would you expect them to be aware of the guidance on closing the top of a cavity that's given in diagram 33?
A. Yes.

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

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

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

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

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

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

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

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

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

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

A. Yes.

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

A. I think it was just because of history.

Q. Yes.

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

were still very much talking about class 0.

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

A. Yes.

Q. Yes.

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

A. Yes.

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

A. Yes.

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

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

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

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

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

Q. Yes.

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

A. Yes, there was a growing awareness.

Q. Yes.

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

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

A. Yes.

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

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

Q. Okay.

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

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

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

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

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

sense of limited combustibility, I would say.
Q. Yes, and you're using the words "limited combustibility" not in the technical sense there ——
A. No.
Q. —— but in a more general sense; is that right?
A. More general sense, yes.
Q. So, say, reduced combustibility, would that be ——
A. Yes.
Q. Yes.
Was there a perception in the cladding industry that class 0 was of relevance to a product's combustibility, that a class 0 product would not burn or would not burn badly?
A. I think it was perceived that class 0 was essentially relating to a surface property of the product, although we know that it's a combination of a surface flame test and another kind of test. But I think, to take your term, there was a perception that it implied that it would not burn badly, yes.
Q. Yes.
A. Yes.
Q. Can you help us as to how that perception had come about?
A. Well ——
Q. What was it that had led people to believe that

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

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

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

"Such materials/products are generally required to be non−combustible or to have a class 1 surface spread of flame."

Now, can I just check: how do you read that? Do you read that as suggesting that class 0 materials or products were generally required to be non−combustible or have a class 1 surface spread of flame?

A. Yes, but I would also say that the definition of class 0 requires a class 1 surface spread of flame plus a certain rating in terms of heat release in accordance with part 6.

Q. Exactly, yes. Thank you.

Then if we can turn to the second course that you've referred to in your report, if we go back to page 31 of your report {JOS00000001/31}, 7.4.2.2, you have referred to a course CWDC "Curtain wall design and construction [for building professionals]". That was a four−day course given from 2007 onwards, so, again, several years before the period we've particularly looked at, and included a lecture entitled "Fire performance of facades".

If we can look at the slides for that lecture, that's at {CWCT0000083}, we can see that this is a lecture called "Fire performance of facades".

If we turn to page 6 {CWCT0000083/6}, we can see

a slide entitled "Spread of flame" this time, and it refers to class 0. Do you see that there in the first, BS 476?

A. Yes.

Q. Then if we go on to page 7 {CWCT0000083/7}, we can see exactly the same information is given about the nature of class 0, precisely what is tested, and that they're generally required to be non−combustible or have a class 1 surface spread of flame; yes?

A. Yes.

Q. So bearing those course materials from the CWCT in mind, and just to be absolutely clear about your evidence −− and I think this follows from your answer to the Chairman's questions, but I'm going to pose it nevertheless −− do you consider that a reasonably competent cladding contractor ought not to have been confused as between class 0 and the combustibility of a material or product?

A. Correct, yes.

MS GRANGE: Yes, thank you.

Mr Chairman, just looking at the time, I'm about to move to a different topic, which is about other key industry guidance documents.

SIR MARTIN MOORE−BICK: Would you like to have a break at that point?

MS GRANGE: Yes, please. This would be a good moment.

SIR MARTIN MOORE−BICK: All right.

Mr Sakula, you probably know we have a break during the morning and the afternoon, and this is a good time to take it, so we shall take it now. We will resume at 11.30.

I think I should say the same to you as I've said to others: please don't discuss your evidence with anyone while you're out of the room. All right?

Thank you very much. Would you like to go with the usher.

THE WITNESS: Thank you.

(Pause)

SIR MARTIN MOORE−BICK: 11.30, then.

MS GRANGE: Thank you.

(11.16 am)

(A short break)

(11.30 am)

SIR MARTIN MOORE−BICK: All right, Mr Sakula, ready to carry on?

THE WITNESS: Yes, thanks.

SIR MARTIN MOORE−BICK: Good, thank you.

Yes, Ms Grange.

MS GRANGE: Yes, thank you.

Yes, Mr Sakula.

A. Can I just add something, just before you kick off?

Q. Of course, yes, please.

A. I was thinking about an answer I gave to a question earlier when you were asking me about what date the sort of transition took place between the knowledge of the class 0 and the Euronorm approach.

Q. Yes.

A. And I was thinking it was probably more like 2017.

Q. Right.

A. And the reason I say that is because I remembered during the break that the CWCT had published a technical note −−

Q. Yes.

A. −− at the beginning of 2017 −−

Q. Yes.

A. −− which made a comparison between the Euronorms and the British Standard classifications, so that would have been around the time when there was a growing awareness of that.

Q. Yes, is that Technical Guidance Note 98, I think?

A. Yes.

Q. Yes, and I'll take you to that guidance at some point.

A. Oh, okay.

Q. No, no, that's extremely helpful, thank you.

I now want to ask you some questions about some of

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

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

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.

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

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

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

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

should have understood how the tests were classified under BR 135, ie that there were pass/fail criteria?
A. I'm sure they would have known there were pass/fail criteria but they may not have known the details of how they were arrived at.
Q. Right. But ought they to have understood that once tested to BS 8414, there would then need to be a separate process of classification of the system under BR 135?
A. Yes, because, I mean, that's what ADB2 says.
Q. Yes.
How much should that reasonably competent cladding contractor have understood about how those classifications were arrived at in relation to the system?
A. Well, as I said, I don't think they would have understood the details of how those particular classifications were arrived at.
Q. Right. But would they have understood that there would be a mechanism for assessing the extent of flame spread across that façade, as part of that system, as part of that classification /examination?
A. Yes, I mean, to be clear, as I understand it, BR 135 talks about pass or failure ——
Q. Yes.

A. —— rather than classification, and they would have understood that it's a fire test. I'm not sure it was specifically about flame spread only, it was an overall fire test.
Q. Yes, and it's about temperature rise, et cetera.
A. Yes.
Q. There's other aspects of it.
A. Yes.
Q. So to what extent would they have had an understanding of what you would need to do to pass that fire test?
A. They would have had an understanding that a test needed to be carried out on a full—scale sample.
Q. Yes.
A. They may not have understood the pass/fail criteria relating to a certain temperature being reached at a certain height above the fire.
Q. Yes.
A. They may not have understood that specifically, but they would have understood the general principle that it was a full—scale fire test.
Q. Yes, that's helpful, thank you.
Looking at page 49 of your report now {JOS00000001/49}, we can see at the top of the page you were asked some questions, and you've set them out at the very top of the page, about the extent to which it

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

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

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

we can see, if we read just the first few paragraphs under 18.2, that's headed "External fire spread over the external faces of buildings", it states there:

"External walls should be constructed using a material that does not support fire spread and therefore endanger people in or around the building.

"Flame spread over or within an external wall construction should be controlled to avoid creating a route for rapid fire spread bypassing compartment floors or walls."

Then there is a note. It says there:

"This is particularly important where a stay put strategy ... is in place."

Based on your experience, would a reasonably competent cladding contractor have an awareness of and an understanding of this part of BS 9991?

A. I don't think they would have been aware of this particular part in a general sense.

Q. Right.

A. I do think, had it been referred to in their specification or contract documents, they should have —— they would have been made aware of it, in that way. But in a general sense, I don't think they would have been aware of this.

Q. Yes.

More generally, would they understand what a stay—put strategy was and its significance in the context of external façade design?

A. I can't really say.

Q. Right.

A. You would have thought so, but I'm speculating about what a third party understood by something.

Q. Yes, no, I understand.

A. I don't know.

Q. But to your knowledge, was a stay—put strategy something that was understood in the cladding industry between 2012 and 2017 in terms of what that meant?

A. I can't answer categorically, but I would say on the balance of probabilities, probably yes.

Q. Yes, okay. Yes.

You suggest at 10.2.5 at page 41 of your report {JOS00000001/40} that you would expect —— I think this follows from what you have just said —— a cladding contractor to be aware of the existence of BS 9991 and BS 9999 but not to be familiar with their contents; yes?

A. Yes, mainly because, as I've said, because much of the information, in fact most of the information, is a repeat of the requirements of ADB2 ——

Q. Yes.

A. —— they probably wouldn't have thought it particularly

significant to read these in detail.

Q. Yes. So would it only be where their specific contract documents had that as a listed specification that ——

A. Yes.

Q. —— you would expect them to consult it?

A. Yes.

Q. Yes.

You make that point at 10.2.5 on page 41, it's there in front of us. You say, picking it up three lines down:

"However, if the documents were specifically referenced in the cladding contractor's contract or the specification I would expect the cladding contractor to have referred to them, and in particular to have read clauses ..."

And then you give particular clauses which are relevant to external flame spread in those documents.

In your experience, were these British Standards routinely included in a cladding contractor's contract or were they routinely omitted?

A. From memory, I would say it was typical to include them.

Q. Yes.

Just thinking more generally, and not specifically about these British Standards, but more generally about guidance, would you expect the reasonably competent

cladding contractor who subcontracts some or all of their work package —— say the design element, say that's subcontracted to another contractor —— to have referred that subcontractor to any guidance documents or standards that were in the contractor's contract?

A. Sorry, could you say the first part of your question again?

Q. Yes. So where you have a reasonably competent cladding contractor who subcontracts some or all of their package of work, say including the design element ——

A. Yes.

Q. —— to another party, would you have expected them to have referred the subcontractor to any guidance documents or standards that were in the contractor's contract?

A. Yes.

Q. Yes, thank you.

Would you expect the reasonably competent cladding contractor to have a system to ensure that these were appropriately considered by the relevant subcontractor?

A. Yes.

Q. And would you also expect the cladding contractor to have a supervisory system to ensure that the work produced was compliant with statutory compliance as well as any relevant guidance documents or standards?

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

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

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

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

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

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

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

between walls of fire resisting construction and performance with rainscreen panels may be different."
Do you see that there?
A. Yes.
Q. Now, would you expect the reasonably competent cladding contractor to have any familiarity with those test standards that I just read out there? They're at the bottom of the left-hand column. That was BS 476-20 and BS EN 1366-4. Those are fire resistance tests. Would you expect the reasonably competent cladding contractor to have any familiarity with those fire resistance tests?
A. No.
Q. No. But just to be clear, that part that I then read out at the top of the right-hand column, where it says that tests are generally constructed with the barrier in a cavity between walls of fire resisting construction and performance with rainscreen panels may be different, you would have expected the reasonably competent cladding contractor to have appreciated that, would you?
A. Yes.
Q. Yes.
A. But that's intuitively obvious, whether or not it's written here.
Q. I appreciate you say it's intuitively obvious; can you

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

Technical Note 73 if they were designing an overcladding of a, say, high—rise building?
A. Yes.
Q. And that would include throughout the period 2012 to 2017; yes?
A. Yes.
Q. Yes.
Can you just confirm to us that these CWCT standards and the guidance was readily available on the CWCT's website throughout that time?
A. It was available to members of the CWCT, not to the general public.
Q. Right.
A. But the technical notes were available free of charge.
Q. Yes.
A. The standard ... I can't remember whether you had to pay for it or not. I can't remember whether that came with a charge or not. It was a much more voluminous document.
Q. But if you were a member, you would easily have access to it?
A. Yes.
Q. Thank you.
The Building Control Alliance now, the BCA, I want to ask you now about BCA Technical Guidance Note 18. If

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

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

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

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

A. Yes.

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

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

Q. Yes.

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

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

A. Yes.

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

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

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

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

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

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

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

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

A. Yes.

Q. Yes.

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

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

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

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

Q. Yes.

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

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

A. That's it, really.

Q. Yes.

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

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

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

A. Yes.

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

incorporates the same requirement, including to comply with the CWCT standard for systemised building envelopes?
A. Yes.
Q. Yes. And also to have third-party certification; yes?
A. Yes.
Q. Now, just stepping back and thinking about industry guidance documents and standards more generally, would you agree that guidance documents and indeed more formal standards can quickly go out of date once they are published?
A. Yes.
Q. Do you consider that the reasonably competent cladding contractor has an obligation to interrogate and question guidance and standards?
A. I think it would depend on the date. If you were in 2013, for example, and you were looking at a standard dated 2010, you wouldn't have any particular reason to question it. If you were looking at one dated 1980, you would be foolish not to question it.
Q. Yes.
A. So ...
Q. Do you consider that the reasonably competent cladding contractor ought to be able to identify where it was clear that particular guidance had become out of date,

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

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

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

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

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

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

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

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

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

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

whether 30 minutes or a greater fire resistance.

We can see that Mr Anketell-Jones gives a view on this point about fire barriers and their rating, and he says there:

"Just that it's ridiculous.

"There is no point in 'fire stopping', as we all know; the ACM will be gone rather quickly in a fire!

"The whole point is to stop 'unseen' fire spreading in the cavity and moving to other parts of the building."

Then he goes on, and we don't need to look at those parts.

So he's saying there that:

"There is no point in 'fire stopping', as we all know; the ACM will be gone rather quickly in a fire!

"The whole point is to stop 'unseen' fire spreading in the cavity and moving to other parts of the building."

Now, in his oral evidence, when he was asked about this email, Mr Anketell-Jones said that he was referring to the fact that aluminium will melt quickly in a fire and that that is a fact known throughout the industry: that in a fire, an aluminium façade will not last very long; it will melt and fall off the building.

Now, would you agree with that, that it was

well known in the industry that the aluminium façade will not last very long, it will melt and fall off the building?

A. Are we talking about an ACM here?

Q. Yes.

A. Yes. Yes, I would say that was pretty well known, yes.

Q. So those physical properties of aluminium would be well known throughout the cladding industry; yes?

A. Yes.

Q. Do you consider that --

A. Sorry, just to be clear.

Q. Yes.

A. We're not talking here about a normal aluminium panel on its own, we're talking about aluminium as part of a composite?

Q. Yes.

A. Yes.

Q. Do you consider that the reasonably competent cladding contractor ought also to have known at this time that ACM would be gone rather quickly in a fire because it contained a combustible PE core?

A. Yes.

Q. Thank you.

Now, finally on the topic of the UAE fires, can I just show you another email, this is at {CEP00049719}.

This is an email from Deborah French of Alcoa, better known as Arconic, to a number of individuals within CEP, who were the fabricator of the panels at Grenfell Tower. The subject is "BBC Report Ref ACM in UAE". So this is consistent with you saying that the UAE fires were well reported, for example by the BBC. Yes?

Just reading her email, she says:

"Hi

"As you may be aware there had been some reports via BBC concerning a fire on a building in UAE regarding ACM.

"As a business we are aware of this report and our technical team are following the details, but in the meantime I wanted to add some thoughts that may help if you get questions from your customers/clients etc.

"Regarding the supply of Reynobond in the UK, as you know we supply both PE [polyethylene] and FR [fire-resisting] core and can control and understand what core is being used in all projects due to the controlled supply route we have. By only supplying Reynobond to a very small group of Approved Fabricators and working very closely with them on all projects we are able to follow what type of project is being designed/developed and then offer the right Reynobond specification including the core.

"At this stage we will continue to offer both PE & FR core and continue the close working relationship we have with our Approved Fabricators to make sure the right technical support, Reynobond Specification and Materials are being used and installed on Reynobond Projects.

"Many thanks for making me aware of the reports and for your continued support."

Now, would it be fair to say that this email reflects what you have termed to be a growing awareness in the industry regarding the fire risks posed by ACM cladding with a PE core?

A. Yes, and I think it also goes beyond that growing awareness. It's a sort of -- it's written as a response to a potential problem I believe this manufacturer must have seen, and trying to reassure their clients.

Q. Yes.

A. Yes.

Q. Now, this email was sent to a fabricator. What would you have expected a fabricator to do upon receipt of information like this at the time about the fire risks posed by ACM PE?

A. It's a rather confusingly worded email, I think, but what the fabricator would have got from it, I think, would be to question perhaps, "Should we be using a PE

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

any way lessen the need for the reasonably competent cladding contractor to conduct rigorous and exhaustive compliance checks each time they use the products? Is that what you would expect of the reasonably competent cladding contractor?
"Answer: Yes."
I just want to be clear on your answer. Are you answering "yes" because you're answering -- it's my fault for the poor way I've put the question -- that you would expect the reasonably competent cladding contractor to conduct rigorous and exhaustive compliance checks each time they used the product; is that right?
A. Could I just read this again?
Q. Yes, of course, I'm so sorry.
A. Re-read this, I just want to ...
(Pause)
Yes, I'm saying "yes" to the question, "Would those considerations lessen the need for them to conduct rigorous and exhaustive compliance checks?"
Q. So you think that you wouldn't need to conduct such rigorous and exhaustive checks if you've used the products for many years on many buildings; is that what you're saying?
A. No, I don't think I'm saying that.
Q. Yes, because I thought you were saying the opposite of

that, that you would still need to conduct rigorous checks and compliance checks even if you've used the materials ——

A. That's what I intended to say.

Q. Great, yes.

A. Yes, that each case has to be looked at on its merits.

MS GRANGE: Yes, thank you.

SIR MARTIN MOORE—BICK: So really I think you're saying previous experience cannot be relied on for future purposes?

A. Yes, because every building is different.

SIR MARTIN MOORE—BICK: Yes, thank you.

MS GRANGE: That's helpful. Sorry, we just had a request to clarify that on the transcript.

A. All right.

Q. Moving to a short topic now, the means of disseminating knowledge within the cladding industry.

If we can look at paragraph 7.2.1 on page 29 of your report {JOS00000001/29}, you tell us there that:

"Most companies in the construction industry subscribe to some sort of library service, whereby they have online access to codes, standards and other technical information. Such services would require at least one named individual within the company who would be the main correspondent. The service would usually

provide regular notifications when new documents are published. On receipt of such a notification the correspondent would be expected to inform those within their organisation who would need to know about the new publication or update to an existing publication."

Now, would you expect, therefore, the reasonably competent cladding contractor to have a system for disseminating updates to those within the organisation to whom they were applicable, for example in relation to design? Would you expect there to be a system for disseminating technical design updates to those within the organisation who were responsible for the design of cladding systems?

A. Yes.

Q. Yes.

Now, I'd now like to ask you some questions about the potential role which a specialist façade engineer or specialist façade consultant could play if appointed. Just to be clear, no such specialist was appointed on the Grenfell project, either at the pre—novation stage or at the post—novation stage once Rydon were appointed as the main design and build contractor.

You very helpfully set out some history surrounding the role that a specialist façade engineer or contractor can play, and if we can start by looking at page 23 of

your report {JOS00000001/23}, at 6.1.1 and following —— I'm not going to read it all out —— you have explained that there was this evolution of this role of the specialist façade engineer or consultant, and you say at 6.1.1:

"During the 1970s and 1980s people with experience in the facade industry began to offer services as consultants, typically to building owners and architects. Initially these were individual consultants, but by the early 1990s the larger multi—disciplinary consultancies in the UK began to recognise the value of providing facade consultancy as a new specialised service."

Then you explain certain terms in 6.1.2. Picking it up halfway through that paragraph, you say:

"Like other kinds of engineer, this service [ie the service of a façade engineer] implied a more 'hands—on' approach, involving for example structural and thermal calculations and detailed design and specification. This is distinct from a pure consultancy role, involving for example the review of architect's drawings."

You tell us in 6.1.3 that you use the single term "façade engineer" for brevity.

At 6.1.4 and following, you provide a little bit more about the history of how the architectural and

other construction professionals have evolved. I'm not going to read all of that out, but you talk about the evolution, for example, of building services engineers in the middle of the 20th century, and at 6.1.6 at the bottom of that page, you say:

"Similarly the growth of facade engineering during the last quarter of the 20th century was driven by the need for building owners and architects to receive sound technical facade advice independent of any commercial interests. The people coming into facade engineering were from a variety of backgrounds: from the design and technical departments of facade contractors themselves; from architects with a technical bent; from product and industrial designers; from building physics specialists; and from structural engineers."

Then at 6.1.9 you go on to explain that:

"The advice given [by such façade engineers] reflected the increasingly complex technical nature of facades in the second half of the 20th century, and generally both building owners and architects welcomed this advice at the pre—contract stages of the project."

But you then explain later in that paragraph that, as well as providing services at that stage, many main contractors also had the appointment of specialist façade contractors.

At 6.1.10, if we can scroll up, we can see:

"The new service was generally welcomed by other professionals in the field, as it was recognised that the facade of the building was the part that had historically given rise to the largest proportion of building problems, such as rainwater penetration, condensation, breakages and so on. Most architects in particular saw the role of a facade engineer as helpful to them in minimising potential future liabilities with regard to the facade."

So that's the background and the genesis of façade engineers, and if we look at page 25 of your report {JOS00000001/25}, you tell us at 6.2.3 that:

"In 2004 the Society of Facade Engineering (SFE) was founded jointly by the Royal Institute of British Architects (RIBA), the Institution of Structural Engineers and the Chartered Institution of Building Services Engineers ..."

You tell us at the end of that paragraph:

"The SFE is a growing professional society, and acts as a 'qualifying' body for facade engineers. However, there is currently no requirement in the UK for a facade engineer to be a member of the SFE in order to practise."

Just to be clear, it's right, isn't it, that façade

engineer and façade consultant are not protected titles, and what I mean by that is those terms are not legally restricted to use by particular persons who have completed specific training or education?

A. That's correct, yes.

Q. Yes.

You note in your report that there is no current requirement for a façade engineer to be a member of the Society of Façade Engineering; that's right, isn't it?

A. Yes.

Q. Is it also right that there is not a minimum qualification level for any grade of membership of the SFE?

A. Oh, I think there probably is, yes.

Q. I see.

A. Yes.

Q. I see, okay.

If we turn now to paragraph 6.5.1 of your report on page 27 {JOS00000001/27}, you tell us there:

"Going back to the early 1990s it would not have been common for a facade consultant to be appointed for an overcladding project of this type. However, it was not unheard of, and I give in paragraph 6.6 below an example. However, by 2012 in my experience it would have been normal for a facade engineer to be appointed

for any large or complex project. The overcladding of a high-rise residential tower is a large project, but it may not be complex. The situation in which a facade engineer would not be appointed for this kind of project would be where the architect had enough technical knowledge and relevant experience not to require the additional expertise, or where the building owner did not wish to pay for an additional consultant."

Now, just to be clear, the example that you give, that you're referring to three lines down in that paragraph of a project where a façade consultant was appointed pre-2012 was the Hackney, East London project you were referring to earlier; is that correct?

A. Yes.

Q. Yes. You tell us that the overcladding of a high-rise residential tower is a large project, and we touched on that earlier, but it may not be complex.

Would you agree that the appointment of a façade engineer or consultant is necessary on a large or a complex cladding project?

A. Well, it's as I've said here, I wouldn't use the word "necessary". I've been careful not to say that it has to be required. It depends on the capabilities of the architect.

Q. Yes.

A. Some architects are comfortable with their technical knowledge and feel that they don't need the services of a façade engineer.

Q. Yes.

A. Others welcome it, and would rather have a façade engineer on board.

Q. Yes.

In terms of Grenfell Tower, was that a complex project in your opinion?

A. Not really, no. Not from a façade point of view.

Q. In reaching that view, have you taken into account not simply the selection of materials but also the geometrical challenges presented by Grenfell Tower itself, for example the configuration of the columns and the relationship between the spandrels and the windows, for example as highlighted by Mr Hyett in the presentation that he did with his physical model?

A. All right, I mean, it's got some geometrical complexity, but it's nothing compared with some buildings I can think of. By comparison with really state of -- cutting-edge buildings, it's not especially complex, in my view.

Q. I see. So you maintain your view that Grenfell Tower was a large project but not a particularly complex project in terms of façade design?

A. Yes.
Q. Is the main consideration to be taken into account when deciding whether a façade engineer is necessary for a large project the capability of the existing professional team?
A. Effectively, yes.
Q. Yes.
A. Yes.
Q. Now, in terms of the pre−novation stage, so the potential appointment of a façade consultant by the client, in this case that would be the TMO, if we look at paragraph 6.6.2 on page 27 of your report {JOS00000001/27}, we can see that you're asked the question just before 6.6.2 in italics:
"Would you expect consideration to have been given to the appointment of a façade engineer or consultant to advise a Local Authority on a project such as the refurbishment of Grenfell Tower? If so, by whom would you expect such an appointment to have been considered?"
You say at 6.6.2:
"In the case of the Grenfell Tower refurbishment I would expect such an appointment to have been considered by the Tenant Management Organisation, in dialogue with Studio E, during the pre−novation phase. The dialogue would have needed to address whether

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

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

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

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

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

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

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

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

137

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

138

and so on. But as I understand it, on this particular project, that wasn't needed, they had in-house capability, as I -- oh, sorry, they did subcontract it, but that subcontractor had that capability.
Q. Yes.
Does the fact that Harley didn't have anyone with a completed qualification in façade engineering, nor anyone formally appointed to the role of technical manager at the time of the Grenfell Tower refurbishment, have any bearing on this question?
A. I don't think having a technical qualification in façade engineering per se had a bearing on it. What was the second part of your question?
Q. Yes, nor was there anyone appointed to the role of a technical manager at the time of the Grenfell Tower refurbishment.
A. I'm not quite sure about what the role of that technical manager would have been.
Q. Yes.
A. They certainly needed someone who was a technical design person --
Q. Yes.
A. -- who would have been reviewing and reviewing technical submissions and drawings and preparing information to send to the architect and so on for review.

139

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

140

appointed and such expertise was not available elsewhere, the reasonably competent specialist cladding contractor could be relied upon to have such design and technical expertise in-house?
A. Yes, if they were reasonably competent.
Q. Yes. So any reasonably competent cladding contractor, in the absence of someone else being appointed, ought to have had the relevant design and technical expertise?
A. Yes.
Q. Yes.
A. If I could just add --
Q. Yes.
A. -- I have experienced in my own career situations where the main contractor wanted to vet the information being provided by the specialist subcontractor, and therefore wanted to appoint a façade consultant to review the subcontractor's work.
Q. Yes.
A. That's not that uncommon.
Q. Yes.
A. I've had a few cases like that. So I think it wouldn't happen -- if the main contractor was comfortable enough with the technical expertise of the subcontractor that they didn't feel they needed to review it --
Q. Yes?

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

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

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

contract is written in terms of responsibilities, and you give us some specific examples -- I'm not going to read this all out -- in the context of what the Grenfell contract says. You say in that paragraph that there was a general obligation on the main contractor which was passed on to Harley in relation to the façade works, and that included the design of the façade.

Is it right that it wouldn't be possible to complete a design of a façade without first considering and accepting or rejecting the basic premise of the design that the cladding contractor was inheriting based on the work of the architect at the pre-novation stage?

A. Yes. There's an interaction, really. On the one hand, the specialist contractor would take it that the architect had done a reasonable job in producing a design which was technically sound and compliant with regulations. On the other hand, the subcontractor took on that responsibility and therefore had to satisfy themselves that it was technically competent and compliant. So it couldn't just rely on the architect having done it, but had to satisfy themselves independently that it did in fact do the job.

Q. Yes, that's very helpful.

Now, in your experience, and in circumstances where -- and I know you said this is unusual -- product

selection had occurred --

A. Yes.

Q. -- in the architect's specification -- so they've not just done a performance specification, you've actually got some products selected -- would you expect a reasonably competent cladding contractor responsible for the design of the façade to have reconsidered that product selection as part of its design obligations and its design work?

A. Yes, I think it had a duty of care to satisfy itself that the products met the specification and regulations, yes.

Q. Yes. So you wouldn't just take a product that was in the spec --

A. Yes.

Q. -- say, "Well, it must be compliant, it must be fine, we'll work with that and just move forward to deal with fixings, et cetera", you would actually ask yourself the question afresh whether that was the right product for this job; yes?

A. Yes.

Q. Yes.

Can you help us as to how it would work in practice in terms of how much weight would be placed on the design work of an architect? What kind of factors would

influence how much weight you would place on that design if you were the design and build subcontractor coming in with design responsibility?

A. In the sense of weight in the sense of confidence in that design, you mean?

Q. Yes, what factors would influence how confident you were in that design and the extent to which you would place any weight on it, if that makes sense?

A. Yes, I suppose it would have to depend to some extent on the experience and reputation of the architect, and what one felt about them. If one had, let's say, a small inexperienced architect, the cladding contractor would probably look at it more closely, in practice. Or on the other hand, if you had a big international experienced architect, they might look at it a bit less closely. But, to be honest, my feeling is their duty of care is the same in both cases.

Q. Yes, thank you.

Let's take the example of cavity barriers for a moment. In circumstances where some work had been done on a cavity barrier scheme and design by the architect, in your view, would the reasonably competent cladding contractor have checked that those cavity barriers were in fact compliant with relevant guidance, including Approved Document B?

A. It's interesting. If you go back to the previous page, in answering your question --

Q. Yes, page 25 of your report {JOS00000001/25}.

A. Yes. Oh, sorry. No, sorry, we're at a different section. I'm sorry, I thought we were in a different section of the report.

Q. Don't worry. If you can tell us which section you want to be in, I can ...

A. It was when we were talking about the appointment of the cladding contractor and the appointment of the architect post-contract. The cladding contractor's appointment said something quite specific, which was they have detailed design responsibility.

Q. Yes.

A. I don't recall that being said in the architect's appointment, but it did say in the architect's appointment that they had responsibility for co-ordinating compliance, I think.

Q. Yes.

A. Something like that, those words.

Q. So if you go back, I think, to page 26 of your report {JOS00000001/26}.

A. Yes.

Q. You were dealing with it at 6.4.2.

A. There, yes.

Q. Is that the bit you wanted?
A. Yes.
Q. Is it 6.4.3:
"By contrast, Rydon's contract with Studio E was much more specific and referred ..."
A. If you just scroll down a bit.
Yes, you see, it refers to "co-ordination of building regulations approvals".
Q. Yes.
A. That seemed to be Studio E's responsibility according to their contract.
Q. Yes.
A. On the other hand, Harley's responsibility seems to be they remain fully responsible for the design, including relevant compliances. So there's a bit of an overlap there, and I think it's tricky when both an architect and a cladding subcontractor are both appointed to have some design responsibilities, it's a bit tricky to know who's really ultimately responsible. They both are, really.
Q. Yes. Could co-ordination of Building Regulations approvals be effectively the co-ordination and the communication with building control, leaving the cladding subcontractor to be fully responsible for the design?

A. Yes, it could be read like that, yes.
SIR MARTIN MOORE-BICK: Well, before you go on, Ms Grange, I would find it helpful to have an answer to the question that Ms Grange had actually asked you before that little diversion, which was this: in a case where some work had been done on the cavity barrier scheme and design by the architect, would the reasonably competent cladding contractor have checked that the cavity barriers were in fact compliant with ADB? In other words, would he regard himself --
A. Yes.
SIR MARTIN MOORE-BICK: -- as under an obligation --
A. Yes.
SIR MARTIN MOORE-BICK: -- to check the architect's work?
A. Yes. The answer is yes.
SIR MARTIN MOORE-BICK: Thank you.
MS GRANGE: Yes, thank you.
If the reasonably competent cladding contractor had subcontracted the installation itself of the cavity barriers to another company, would you expect that cladding contractor themselves to carefully supervise and regularly check the installation to ensure it was compliant?
A. Yes.
Q. Yes.

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

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

ventilation to sub-divide the building into compartments ..."

Then at 2.20.8 on page 46 {CWCT0000053/46}, we can see under the heading "Insulation in the cavity" it tells us:

"Where it is necessary to provide insulation in the cavity fixed to the outer face of the air barrier for the purposes of thermal insulation and condensation control then the insulation shall be of a non-combustible type."

A. Yes.

Q. Then on the right it says:

"In certain conditions insulation with appropriate surface spread of flame characteristics may be considered. However, the use of a separate fire barrier, not incorporating the combustible insulation, should always be specified."

So we have those excerpts there.

Then if we look at the other CWCT document from 1996, which is at {CWCT0000055/13}, this is the guide to good practice for façades. We can see at paragraph 4.10.1, under "Thermal Insulation", it says:

"Thermal insulation shall be inert, durable, rot and vermin proof and should not be degradable by moisture or water vapour. Attention is drawn to the fire

performance of some insulating materials as set out in the relevant Standard."

So we can see that there was guidance within those CWCT documents about the need for non-combustible or inert insulation.

Now, taking those excerpts --

A. Just to be clear, inert doesn't mean non-combustible. Just to be -- so we're not --

Q. No, I understand that. I do understand that.

A. Yes.

Q. But taking those excerpts into account, would you agree that if the Curtins performance specification was followed, which incorporated express reference to these two documents, it would have led a reasonably competent cladding contractor to select non-combustible or at least limited combustibility insulation?

A. Yes. However, I'd like to qualify that.

Q. Yes, please go on.

A. Which is, as we discussed earlier, the Approved Document B would have been considered together with these documents, and I think a cladding contractor probably would have looked at Approved Document B and said, "Well, Approved Document B allows me to do this, so I'll follow that", because it would have had a greater weight.

Q. Yes, I see, yes. Yes.

Now, fire strategy reports now. I want to ask you some questions about cladding contractors' obligations in relation to fire strategy reports.

If we go to page 62 of your report {JOS00000001/62}, this is under the heading, "Relationship between cladding contractor and fire engineer" this time. We can see that you're asked the question at (a) below that:

"To what extent was it the practice for fire safety or fire strategy reports prepared by fire engineers to be considered by specialist cladding designers or contractors?"

You tell us at 18.1:

"Fire safety and fire strategy reports contain much information relevant to their subject matter. I would expect a cladding contractor to have read these reports and to take note of any matters which affected their work, particularly with regard to materials and design detailing."

Just pausing there. When you say there, "Fire safety and fire strategy reports contain much information relevant to their subject matter", can you just expand on that for us and explain what information a cladding contractor would typically expect to find in

a fire safety strategy report which would be relevant to their work?

A. Well, it might contain information about the requirements for cavity barriers, for example. It might say cavity barriers shall be provided at so many centres or having a capability of so many minutes or something, information that could be got from the approved document, but the fire strategy report might have set out that information just to make it easier.

Q. Yes.

A. It might show where means of escape routes were. Sometimes parts of the façade have to be breakable so that means of escape can be achieved, occasionally, or breakable so that the Fire Brigade can get into the building in an emergency.

What else?

There might be situations where parts of the building had to be fire resistant because they were near, for example, a railway line or something, and therefore they had to have a two-hour fire rating or something like that.

So that sort of information.

Q. Yes, thank you.

Now, in circumstances where these fire strategy reports or report had not been provided to a cladding

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

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

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

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

certificates had?
A. It was a good reputation.
Q. Yes.
If we look at page 49 of your report {JOS00000001/49}, paragraph 12.1, I just want to look at the first four lines of that.
You're being asked about the understanding by the cladding industry of fire test evidence, and to what extent was it common within the cladding industry to be requesting fire test evidence from manufacturers or suppliers of cladding products, and at 12.1 you say:
"Specialist contractors or their cladding designers would normally have referred to the manufacturers' technical literature and/or relevant certification for the products they were considering. Such certification would have included, for example, BBA or LABC certification."
Now, you say that specialist contractors would normally have referred to the manufacturer's technical literature and/or relevant certification.
If the reasonably competent cladding contractor was aware that a product held certification from the BBA or the LABC, for example, would you expect them to review those certificates as part of its assessment of the product?

A. Yes, I think I've said elsewhere, in general I would expect the contractor as a whole to accept that certification, but I would expect their technical department to look at it a little bit more closely.
Q. Yes. So just ——
A. To examine the details of the certificate, that's what I mean.
Q. Yes.
A. Yes.
Q. Yes.
Just staying with this paragraph and carrying on, picking it up in the fourth line, so this is 12.1, you say:
"These certificates in turn may have given relevant BS, EN or fire test references and strictly the cladding contractor or their designers should have looked at this background information. However, in my view, most cladding contractor/designers would have regarded the BBA or LABC as an authority, and they would have been content to rely on the certificates, without going back to the source data, provided of course that they (the contractors) were mindful of any caveats included on the certification."
Now, in section 13 of your report —— we don't need to turn to it —— you've identified a number of important

features concerning the BBA certificate from 2008 for the Reynobond panels. I'm just going to summarise some of the features you've identified.
For example, you've identified that the first page of the certificate gives the impression that the product has class 0 without qualification. That's one of the points you've made. But you go on to explain that section 6 of the certificate on fire performance contains much technical detail which requires significant analysis in order to obtain a clear understanding of what exactly the fire properties are of the product. Is that fair?
A. Yes.
Q. A fair summary? Yes.
A. By the way, I still have section 12 up on the screen here.
Q. Yes, sorry, if we can just turn to section 13, so I think it's the next page or the page after, if we go to page 50 {JOS00000001/50}. Yes, here it is.
You have also said that it was not clear exactly what was covered by the certificate and whether that included the whole cassette system or the subframe supporting it, and you have said that at the very least that ambiguity about whether the certificate covered the cassette panels should have led a cladding contractor to

raise that question with Arconic; yes?
A. Yes.
Q. Now, in those circumstances, and particularly given what you have said about the important limitations contained in section 6 of the certificate, would it have been necessary, do you think, to consider the underlying source tests and test data in order for someone to fully understand the fire performance of the product and in order to understand the certificate and its limitations?
A. Yes, I think the question should have been asked. I'm not saying that the cladding contractor should themselves have necessarily interrogated the test data, but at least they should have had a dialogue with the manufacturer to find out what background information there was to the certificate.
Q. Yes. Yes, so that the true nature of the product's fire performance could be ascertained.
A. Yes.
Q. Yes.
If we go now to paragraph 13.3 of your report at page 50 {JOS00000001/50}, I think this is where you're dealing with the point about who should have read which bits of the certificate, and you say:
"In my opinion, most members of a cladding contractor's staff would have been content to see that

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

But then you go on:

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

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

A. Yes.

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

A. Yes.

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

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

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

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

A. Yes.

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

A. Yes.

Q. —— for example ——

A. Sorry.

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

A. Yes.

Q. The architect?

A. Yes.

Q. The fire engineer?

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

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

Q. Yes.

A. Yes.

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

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

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

A. Yes.

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

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

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

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

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

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

MS GRANGE: Yes, thank you.

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

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

And you say:

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

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

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

Q. Yes.

A. —— you know.

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

A. Yes.

Q. Yes.

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

Q. Yes.

A. Yes.

Q. Yes.

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

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

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

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

Q. No, that's fine.

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

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

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

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

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

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

A. Yes.

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

(Pause)

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

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

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

Q. Yes.

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

Q. Yes.

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

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

Q. Yes, I understand that.

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

Q. Yes.

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

A. Yes.

Q. Now, at paragraph 3.10 of your report there, you say:

"Furthermore, I note that clause 1.1 of the certificate states that 'The panels are available either plain edged (riveted system) or flanged (cassette system) to suit architectural requirements ... Figure 1 shows illustrations of both systems."

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

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

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

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

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

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

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

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

much from a consideration of the geometry or the chemistry as the fact that there had been some perfectly clear examples of where it had caught fire.
MS GRANGE: Yes.
Mr Chairman, I think that's a very good moment for the afternoon break.
SIR MARTIN MOORE-BICK: Yes, so do I.
We're going to have a short break now, Mr Sakula. We will come back at 3.35, please. Usual request: please don't speak to anyone about your evidence while you're out of the room.
THE WITNESS: All right.
SIR MARTIN MOORE-BICK: Thank you.
(Pause)
All right, 3.35, please. Thank you.
(3.21 pm)
(A short break)
(3.35 pm)
SIR MARTIN MOORE-BICK: Right, Mr Sakula, ready to carry on, I hope?
THE WITNESS: Yes, thanks.
SIR MARTIN MOORE-BICK: Thank you very much.
Yes, Ms Grange.
MS GRANGE: Yes, thank you.
Now, staying with the ACM cladding panels, I now

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

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

about anything else". Is that what you're saying?
A. I imagine that's -- I have been asked what they would have thought, right? And so I imagine that's what they would have thought. Because I think that the issue is -- I understand what the Building Regulation says. In the industry, ADB2 would have been considered as the document which sets out an interpretation of how the regulation should be complied with, and ADB2 was the document that probably building control officers would have referred to. So that would be considered the source document.
But I agree with you about what the regulation actually says, and I in fact bring it up later, that the spirit of the regulation is something different. But all I'm saying is that in terms of what they thought they needed to do, I think they would have looked at ADB2 and felt that that told them what they needed to do.
SIR MARTIN MOORE-BICK: Without --
A. Otherwise why have ADB2?
SIR MARTIN MOORE-BICK: Well, it's not just that, is it? It might be said that if you understand class 0 correctly that it is limited in its scope to the outer surface, it leaves open the question of the nature of the material between, in this case, the two aluminium skins, and I'm

just wondering whether you're saying that, in your view, a competent cladding contractor at the time we're discussing would have felt that he could ignore that.
A. Well, my view is that ADB2 didn't really acknowledge the existence of composite materials. It was silent on it, and probably should not have been, but it was silent on it, and therefore it didn't really cover it. It was an omission. And so I think people tried to use ADB2 to the best of their ability to cover a case for which it probably wasn't written, you see.
SIR MARTIN MOORE-BICK: So what does the competent contractor do? Does he just not worry about the substance of what he's planning to put on the building? It seems rather inconsistent with things I've read elsewhere in your report, that's all.
A. Sorry, is your question about: should they have considered something in addition to the requirements of ADB2?
SIR MARTIN MOORE-BICK: Well, I suppose my question is: should a competent contractor at the time have asked himself about the nature of the core of the ACM panels, not just their surface, and as a result have thought about the dangers inherent in using that material on certainly a building of this kind?
(Pause)

A. Yes, I think they should have thought about it, and then they would have thought: well, I'm required to satisfy class 0, and what do I need to do to satisfy it? And they would have subjected their material to it.
The problem I have with it is that if one is to consider the core, what test would one apply? It's not set out anywhere. And that's the question that the cladding contractor would have raised.
SIR MARTIN MOORE-BICK: Well, the test might be a common sense test, particularly in the light of the fires in the Middle East.
(Pause)
A. Sorry, is that a question?
SIR MARTIN MOORE-BICK: Well, I'll formulate it in a different way, if you like.
MS GRANGE: Mr Chairman, if it helps, I'm going to come to the very bit of Mr Sakula's report that deals with this particular question in just a moment.
SIR MARTIN MOORE-BICK: All right. Well, perhaps I had better let you take your course.
MS GRANGE: I wonder whether it might help Mr Sakula to be reminded of what he's got in his written report and then we have supplemental questions.
SIR MARTIN MOORE-BICK: As usual, Mr Sakula, it's better that, instead of jumping in and asking questions, I let

Ms Grange come to it in her own time.
MS GRANGE: No, no.
SIR MARTIN MOORE-BICK: We'll let her do that.
Yes, Ms Grange, on you go.
MS GRANGE: Yes.
So, just to recap, you've given your interpretation just purely looking at 12.6 and diagram 40, but you have also acknowledged that a reasonably competent cladding contractor would have been aware that the class 0 rating was testing mainly the exterior of the panels.
Can I just look at a couple of passages in the CWCT standards. If we look at the CWCT standard for walls with ventilated rainscreens at {CWCT0000053/45}, if we go to 2.20.3 at the top, it states there under "The rainscreen cladding":
"The outer skin of a wall of 'rainscreen' construction ... shall have a surface spread of flame of Class '0' rating on both faces in accordance with the Building Regulations. The two faces are the external ... panel surface and the internal ... panel surface ..."
So that's telling you about the class 0 for the external.
Then on page 46 {CWCT0000053/46}, 2.20.6 under the heading "Composite materials", it says:

"When one of the rainscreen cladding elements ... is a composite of two or more materials (mechanically jointed, bonded or fused together) the individual elements, including adhesive must demonstrate the appropriate fire performance. Similarly it must be demonstrated that the composite will remain reasonably whole and not become prematurely separated from the building or framework."

So we've got those passages in that standard.

Then if we look at the CWCT standard for systemised building envelopes, the main CWCT standard from 2008 ——

A. I'd like to come back to 2.20.6, though, after you've done this, if you don't mind.

Q. Why don't we deal with it now. Do you want to make a comment on that section?

A. Yes, and that's two comments. I'm sorry, because you haven't actually asked the question, so maybe it's a bit unfair ——

Q. No, no, say what you were going to say about your interpretation of this.

A. 2.20.6. I've read this and what I find —— I have a couple of difficulties with this. It says the individual elements must demonstrate the appropriate fire performance. I'm not quite sure what "the appropriate fire performance" means in that context.

Q. Yes, yes.

A. What is the appropriate fire performance? It's not specified.

Q. Yes.

A. The second point is that it says "demonstrated that the composite must remain reasonably whole and not become prematurely separated from the building or framework". If one reads BS 476—7, which is the spread of flame test, it actually similarly says that any mechanical delamination or disintegration should be recorded, but it makes a point of saying that this sort of disintegration does not affect the fire classification. It specifically says that.

Q. Yes.

A. So it distinguishes between mechanical disintegration of a composite and the fire classification. So that's why I find this a little bit unclear.

Q. Yes, I understand.

A. Okay.

Q. Yes.

If we look at that CWCT standard for systemised building envelopes at {CWCT0000046/13}, here we see at 6.4.2.1 we've got something on surface spread of flame and external surface spread of flame. It says:

"The external surface of the envelope shall satisfy

the requirements for Class 0 when tested in accordance with BS 476: Parts 6 and 7 (National class) or Class B ... in accordance with ... (European class).

"For rainscreen panels this requirement applies to both the visible external surface of the panel and the surface of the panel facing the cavity."

So, again, it's talking about the two surfaces.

A. Yes.

Q. Then at 6.6.3 on page 16 {CWCT0000046/16}, it talks about composite components, and it says:

"When one of the cladding elements is a composite of two or more materials (mechanically jointed, bonded or fused together) the elements as a whole, must demonstrate the appropriate fire performance."

So that's the same wording, and your point there is: well, what is the appropriate fire performance?

A. Yes.

Q. "Similarly it must be demonstrated that the composite will remain reasonably whole and not become prematurely separated from the building or framework."

Now, I think the point here is that even if it's not telling you what the appropriate fire performance is, if you read these standards, isn't it getting you to think about the fire performance of each component of your composite panel? Isn't it at least getting you to ask

that question ——

A. Yes.

Q. —— or inviting you to ask that question? Would you agree?

A. Yes.

Q. Going back to paragraph 12.6 and diagram 40, if we go back to page 59 of your report {JOS00000001/59}, paragraph 17.4, you say there:

"Clause 12.6 of ADB ... requires that 'The external surfaces of walls should meet the provisions of Diagram 40. Diagram 40 shows that surfaces on buildings should meet Class 0 for floors above 18m. I am aware that there are differing views on how 'external surfaces' is interpreted. In this context, my opinion is that a reasonably competent practitioner in the cladding industry would have an everyday interpretation of this, and would consider that a panel that met Class 0 when tested would satisfy this clause. I do not consider that they would have considered this to apply separately to the core of an ACP."

So that's how you read just 12.6 and diagram 40 taken on its own; is that correct?

A. Yes.

Q. Yes.

Can you just explain what you are aware of in terms

of the differing views on how "external surfaces" is interpreted? You say you're aware that there were different views on how the phrase "external surfaces" is to be interpreted. Can you just explain how you became aware of that? Was that something pre-Grenfell or post-Grenfell?

A. Post-Grenfell.

Q. Yes.

A. I can't remember whether it's in Mr Hyett's report, but I know it's in Dr Lane's report, a view on this subject.

Q. Right. Yes.

You say at the end of that paragraph:

"I do not consider that they would have considered this to apply separately to the core of an ACP."

Can you just be clear what exactly you mean by that. When you say "this to apply", what are you referring to? Do you mean there wasn't a separate class 0 or Euroclass requirement for the core of the panel?

A. Sorry, I need to look at the beginning of that paragraph.

Q. Yes, sorry, if we go back to 17.4 at the bottom of page 59.

(Pause)

A. Go back again then.

(Pause)

Yes, "they" in that case refers to the contractor.

Q. Yes.

A. "... would have considered this to apply separately ..."

Yes.

Q. When you're talking about "this to apply" --

A. Sorry.

Q. In the very last sentence you say:

"I do not consider that they [ie the reasonably competent contractor] would have considered this to apply separately to the core of an ACP."

Do you mean the fire performance standards?

A. The requirement to meet -- well, what I mean is my understanding is that the class 0 test would have had to be applied -- the testing to reach class 0 would have had to be applied to both internal and external faces of the panel, but there was no test specified for the core of the panel.

Q. Yes.

A. So I couldn't see how you could apply a class 0 test, or any kind of surface spread of flame test to the core of the panel.

Q. Yes.

Now, just moving on to 12.7 of ADB, which is the next provision, I just want to read that. If we bring this up within ADB, it's {CLG00000224/96}. There we

have 12.7 "Insulation Materials/Products", and it says:

"In a building with a storey 18m or more above ground level any insulation product, filler material (not including gaskets, sealants and similar) etc. used in the external wall construction should be of limited combustibility (see Appendix A)."

If we look at what you say about this in your report at page 47 {JOS00000001/47}, at paragraphs 11.5 and 11.6, you say this:

"11.5. I consider that a cladding contractor would have considered paragraph 12.7 to refer to insulation used as part of the external façade system.

"11.6. The term 'filler material' in clause 12.7 is, however, unclear. I would consider that it was intended to refer to gap fillers such as expanding foam fillers. I do not think it was intended to refer to the core of an ACM panel, which I have never heard referred to as 'filler'. I also think that a reasonably competent cladding contractor or product manufacturer would have had a similar view."

Can you just help us as to when you formed the view that the term "filler" was unclear? When did you reach that view? Was it when looking at the Inquiry's questions?

A. Yes, although I probably looked at it -- certainly when

I looked at the Inquiry's questions, but I probably also looked at it previously in recent years, and I've always found it a little bit odd, that phrase.

Q. Yes. Is your interpretation of the term "filler material" in that clause, is that solely based on the wording and the language used in paragraph 12.7 of Approved Document B, or have you been influenced by anything else in terms of your view of that particular wording?

A. Well, could I answer that question slightly in a round-about way?

Q. Of course.

A. Which is: I'm aware of the fact that the -- I think the Ministry of Local Government issued some post-Grenfell information which seemed to imply that filler included the core of an ACM panel, I believe.

Q. Yes.

A. Which I thought -- frankly, I don't agree with that. I think that was, I don't know, trying to sort of -- I just think that was a bit of a stretch, a linguistic stretch, really, since clause 12.7 was about insulation, not about cladding.

Q. Yes.

A. I believe there may have been a conference in Oxford, 2019, where there was a presentation given, and

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

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

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

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

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

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.

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

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

on the project?
A. I'm sorry, could you repeat the question?
Q. Yes. On the assumption that it's the cladding contractor that is actually proposing the use of ACM PE panels ——
A. Yes.
Q. —— would you agree that it was particularly important that that cladding contractor informed others of the hazards of using those panels?
A. Yes, because it was they who were proposing it as a cost—saving alternative, yes.
Q. Yes.
Do you agree that any reasonably competent cladding contractor carrying out such an overcladding project should have ensured that the building control officers responsible for approving the construction works knew of the nature and make of the panels used so as to be in a position to satisfy themselves about the suitability of those panels?
A. That who should be —— I got the last part of the question, but who ——
Q. Should the cladding contractor have been responsible for making sure that the building control officers were aware of the nature and the make of the panels?
A. Yes, I think so, yes, but, as we were talking about

earlier, I understood that it was the architect's responsibility to co—ordinate building control approval, so it wasn't —— they had responsibility too to do that.
Q. Yes.
Taking into account what was known about the risks associated with PE—cored ACM, do you think that a reasonably competent cladding contractor ought to have sought confirmation or verification about the use of such panels from a suitably qualified professional such as a façade consultant or façade engineer?
A. Yes, except I would also say that there were parties involved in the team who could have provided similar advice, for example there was a fire consultant, although their appointment was a little bit ambiguous ——
Q. Yes.
A. —— by that point, but there was a fire consultant on the project who they could have asked. It wasn't only a façade engineer. Or they could have raised it further and more forcefully with the main contractor or the architect.
Q. Yes.
Do you agree that where the specification or contract for a cladding project expressly required compliance with fire performance with a standard that went beyond the requirements of ADB, any reasonably

competent cladding contractor would comply with those additional or more strenuous requirements?
A. It's a difficult one, because it comes back to this question of the hierarchy and which requirements carry more weight.
Q. Well, let me give you a specific example.
If we look at the CWCT standard for systemised building envelopes, the main CWCT standard, and if we can go to that at {CWCT0000046/11}, at 6.2 we can see, fourth paragraph down under "General", it says:
"The building envelope shall not be composed of materials which readily support combustion, add significantly to the fire load, and/or give off toxic fumes."
Now, focusing on the first parts of that sentence, just assume that that CWCT standard is part of the contractual requirements.
A. Yes. Then in that case ——
Q. Do you think that, in those circumstances, this effectively should have overridden anything that was contained in ADB and meant that you didn't use ACM PE materials?
A. It does read like that, and it does appear to override it, yes.
Q. Yes. Because can we agree that, as demonstrated by the

UAE cladding fires, it was apparent to the cladding industry that PE—cored ACM cladding panels did readily support combustion and would add significantly to the fire load in any fire involving a cladding façade constructed of such panels?
A. Yes.
Q. So, again, just to be clear, can we agree that any reasonably competent cladding contractor carrying out a project which required compliance with this particular standard would have appreciated that PE—cored ACM should not be specified or used on that project?
A. Yes.
Q. Would reading that part of the CWCT standard have led the reasonably competent cladding contractor to instead use FR—cored panels to ensure that it didn't contribute to the fire load?
A. Yes.
Could I just make an observation? It's interesting, because this statement made seems to imply all building envelopes, regardless of the height of the building. So even if you had a single—storey building, this would apply ——
Q. Yes.
A. —— which seems every so slightly onerous.
Q. Right.

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

Q. Now, considering your view that the Building Regulations themselves, ie the functional requirements, carrying the greatest weight -- we saw that in section 17 of your report -- do you consider that the reasonably competent cladding contractor, taking into account that functional requirement, taking into account the warnings in industry guidance, including BR 135 and the CWCT, and taking into account the UAE fires, would have considered that PE-cored ACM panels complied with the functional requirement B4 or did not comply?
A. I think they did comply with the functional requirements of B4, but they didn't comply with other industry guidance.
Q. Why did it comply with functional requirement B4, ie the requirement to adequately resist the spread of fire over the walls?
A. Because as I said earlier, I believe that statement in B4, in 12.5, is an introductory statement which is then fleshed out by further detail, and I think that further detail would have been given more weight than the original introductory statement.
Q. But I think there is a difference between what you see in B4, the functional requirement itself, from the Building Regulations --
A. Oh, sorry, you're talking about the Building Regulation, not ADB2?

Q. Yes.
A. Sorry. Could you ask the question again, please?
Q. Of course.
So considering your view that the Building Regulations carry the greatest weight, that's the function requirement --
A. Yes.
Q. -- adequately resists the spread of fire across the walls --
A. Yes.
Q. -- and given the warnings we've seen in other industry guidance and the UAE fires, would a reasonably competent cladding contractor have considered that PE-cored ACM panels complied or did not comply with that functional requirement?
A. No, I think they would have -- they should have considered that it did not comply.
Q. Yes.
Should the reasonably competent cladding contractor have gone further than just considering the combustibility of ACM panels and, in your view, also concluded that ACM PE was unsafe to use on high-rise buildings?
A. That what was unsafe to use?

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

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

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

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

INDEX