GRENFELL TOWER INQUIRY RT

Day 235

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(Proceedings delayed)
(10.08 am)
SIR MARTIN MOORE-BICK: Good morning, everyone. Welcome to today's hearing. Today we're going to continue hearing evidence from Dr Smith, formerly of the Building Research Establishment.
So would you ask Dr Smith to come in, please.
DR DEBBIE SMITH (continued)
SIR MARTIN MOORE-BICK: Good morning, Dr Smith.
THE WITNESS: Good morning.
SIR MARTIN MOORE-BICK: Are you ready to carry on?
THE WITNESS: Yes, thank you.
SIR MARTIN MOORE-BICK: Thank you very much.
Yes, Mr Millett.
Questions from COUNSEL TO THE INQUIRY (continued)
MR MILLETT: Yes, Mr Chairman, good morning. Good morning to you. Good morning to members of the panel.
Dr Smith, good morning to you.
A. Good morning.
Q. Now, on Thursday evening, when we broke, we were looking at the literature review at {BRE00001353}, if we can please have that back up. You will recall we were in this document, I think?

A. Yes.
Q. Can we please start at the bottom of page 13 {BRE00001353/13}, where you see "External Surface", and that says:
"Provisions are made in AD B to restrict the combustibility of external walls of buildings that are less than 1000mm from the relevant boundary. This is in order to reduce the surface's susceptibility to ignition from an external source, (e.g. an adjacent building)."
Then if you go over the page {BRE00001353/14}, the first paragraph there, it says this:
"Irrespective of boundary distance, Diagram 40 (Provisions for external surface of walls), in AD B, restricts the combustibility of external walls of high buildings (where the top floor is at least 18m above ground level) and those of the Assembly and Recreation Purpose Group, to reduce the danger from fire spread up the external face of the building."
You will note the word "combustibility" there. Do you consider that paragraph to be an accurate statement?
A. Well, my interpretation of this has always been, as I think we spoke about on Thursday, in the sense that combustibility is something that's binary. So a material and whatever is either non-combustible or, if

it isn't non-combustible, it is combustible.
MR MILLETT: Yes, indeed.
SIR MARTIN MOORE-BICK: Sorry, you hadn't finished there?
A. Well --
SIR MARTIN MOORE-BICK: Or had you?
A. Yes, yes.
SIR MARTIN MOORE-BICK: You had. I'm sorry.
A. Yes, sorry.
MR MILLETT: Indeed. So what do you make of the phrase "Diagram 40 ... restricts the combustibility of external walls of high buildings"?
A. I guess -- well, my interpretation of that is that it is referring to the different classifications that relate to predominantly BS 476-7 and the surface spread of flame test. Obviously class 0 includes the fire propagation test as well. But there is a hierarchy associated with flame spread ranging from the class 3 up to the class 0, being the best performing within that context.
Q. How does diagram 40 of Approved Document B, at least at 2000, in that edition, reduce the combustibility of the external surfaces of walls?
A. Yeah, I mean, perhaps -- I mean, I wouldn't necessarily describe it in that way now, in the sense that it is -- but what it is trying to do is to say that, you know,

the closer you are to the boundary, et cetera, then you have to have a better classification in terms of the surface spread of flame. So it's a graduation in terms of, you know, the performance, but accepting that all of the materials that are class 0 and above, or worse, are, in effect, combustible.
SIR MARTIN MOORE-BICK: I'm sorry to interrupt you so early, Mr Millett, but can I just ask you this: is there some confusion, at this point and maybe in some other documents, between the combustibility of, as it's put here, external walls, and combustibility of the external surfaces of the walls?
A. Do you mean in terms of the entire wall make-up?
SIR MARTIN MOORE-BICK: Well, that's the point, because as I understand class 0, it is actually a measure of the combustibility of the surface, not necessarily of what's under the surface.
A. Yes, although, of course, if you've got a product that has got a surface coating on it or whatever, then the performance of that surface is dependent upon what is behind it as well.
SIR MARTIN MOORE-BICK: Exactly. But what's written here is that the diagram restricts the combustibility of external walls, as if that relates to the whole of the substance of the external walls, whereas --

A. Okay, I see what you mean.
SIR MARTIN MOORE-BICK: -- class 0 only speaks to the surface, doesn't it? And that's a confusion which, if it exists -- as it seems to me at the moment it does -- is potentially rather dangerous.
A. Yes, and I suppose that part of the issue that you're referring to there in this context would be the definition of "external wall", which a lot could be solved by, you know, a proper definition of "external wall" and what that actually means, if it means the whole wall make-up or, you know, just the external element of it.
SIR MARTIN MOORE-BICK: So if we go back to where I started, would you accept that there is a degree of confusion here between the surface and the substance?
A. Well, that certainly seems to be the way that it has been interpreted. I mean, I think -- yes, yes.
SIR MARTIN MOORE-BICK: All right, thank you very much.
Yes, I'm sorry, Mr Millett.
MR MILLETT: And in addition to the answers to the questions that the Chairman has just asked you, there's another confusion, isn't there, I would suggest, which is that, in fact, diagram 40 doesn't address combustibility, in its sense defined in ADB, at all, does it?
A. Well, as I say, I go back to what I said before, in it

being a binary definition, in that something is either non-combustible or it isn't, and if it's not non-combustible, it's combustible. And, you know, you would not typically carry out a BS 476-6 and 7 test on something that you knew to be non-combustible. You just wouldn't do that.
Q. In fact this statement -- I'm sorry.
A. Yes, sorry.
Q. I thought you'd finished your answer.
A. No, that's fine, sorry.
Q. Is it right that, looking at it now, this statement is actually fundamentally erroneous for two separate reasons: first, because diagram 40 doesn't restrict combustibility strictly so-called; and, secondly, because it purports to restrict the combustibility -- or the report says that it restricts the combustibility of the entire external wall, whereas in fact diagram 40 only relates to the surface?
A. Well, that depends, as I've said, as we've just said, on the definition of "external wall", and my reading of this is that, insofar as it is restricting and giving a graduation in terms of performance in relation to the surface spread of flame, then it is in some way contributing to restricting the combustibility. It is saying that you must use, you know, a better performing

product the closer you are to the boundary.
SIR MARTIN MOORE-BICK: Mr Millett, I'm sorry to interrupt you yet again, but I understand that in some cases there's a transcript problem.
Can I ask, first of all, is your transcript working?
MR MILLETT: My transcript is working, although I've seen the note on the subject. But, yes, it is.
SIR MARTIN MOORE-BICK: I'm going to ask counsel who are here for BRE whether their transcript is working.
MS LEEK: Mine is. It has just come back.
SIR MARTIN MOORE-BICK: It has just come back. All right.
MR MILLETT: Shall we press on and I will --
SIR MARTIN MOORE-BICK: The public transcript is running as well. Good. It sounds to me as though we might be back out of trouble, so we'll carry on.
MR MILLETT: Let's continue.
Dr Smith, you'll recall -- maybe you won't, but I'll give you the reference anyway -- that you signed this report off, and it's page 4 {BRE00001353/4}.
A. Mm-hm.
Q. It's your signature, bearing the date of 30 March 2000.
Can we assume that you read this report carefully before you signed it off?
A. Yes, I would have done.
Q. So can you explain, going back to page 14

{BRE00001353/14}, how the error or the confusion crept in? Why did you not correct it at the time to make it clear?
A. In terms of the way that we were interpreting that at the time and the fact that diagram 40 is headed "Provisions of external surfaces of walls", our interpretation -- well, we weren't aware that there was particular confusion around this point.
Q. But just as a matter of the way this is set out on the page, it isn't right that diagram 40 restricts the combustibility of external walls of high buildings. It's much more refined than that, isn't it?
A. I don't entirely agree because of the reasons that I've just explained.
Q. Now, Sarah Colwell told us in her evidence that this wording would have been written by Brian Martin as, as she put it, the expert on that area; does that accord with your recollection in relation to the division of work between you in the production of this document?
A. That would be my expectation today, yes.
Q. Right. I'm going to read into the record the reference: it's {Day232/36:17}. That's just for our purposes for later.
When you signed this off, was there some misunderstanding in your own mind at the time between

class 0 and combustibility?
A. No.
Q. Did you ever detect that there was confusion in Mr Martin's mind or Dr Colwell's mind about the differences between what diagram 40 did and the concept of combustibility as defined?
A. Not that I was aware of, no.
Q. And yet, in answers to the Chairman this morning and to me, I think you accept that the phrase "Diagram 40 restricts the combustibility of external walls of high buildings" is not accurate?
A. Not entirely, no.
Q. No.
A. I don't -- but I don't entirely accept that it doesn't reflect the fact that -- you know, the combustibility issue, which, as I say, we've just discussed.
Q. Just tell me, then -- maybe I've misunderstood your evidence -- what is it in diagram 40 that restricts the combustibility of external walls?
A. So, basically, my understanding has always been that you would not be carrying out BS 476-6 and/or 7 tests on any product or material that is non-combustible. Therefore, clearly they are combustible, and then you have a ranking system in terms of their reaction to fire characteristics which is built into diagram 40. You'll

see, you know, in diagram 40, you've got different classes depending upon the location in the building or where the building is actually located in proximity to adjacent buildings.
Q. But those classes are not combustibility tests, are they?
A. Yes, to some degree, I think they are.
Q. You think they are. Well, 476-6 --
A. The more combustible -- sorry, the more combustible a material is or product is, you know, the worse the spread of flame characteristics will be.
Q. 476-6, is that a combustibility test?
A. 476-6?
Q. Part 6.
A. Insofar as it is measuring the amount of heat that's produced on exposure to an external radiant panel within the box, then it is measuring the amount of energy that's being released from the surface that's been exposed.
Q. But it's not a test for combustibility as opposed to non-combustibility, let alone a test for limited combustibility, is it? It's a test for propagation of fire.
A. But there are very -- there are a number of characteristics that you need to understand when you

start talking about combustibility, and really what you're looking at is the contribution that a material or product can make to the fire growth behaviour.
Q. Similarly, part 7 isn't a combustibility test, is it? It's a surface spread of flame test.
A. But then the amount of energy that a product or material will contribute to a fire over a period of time is dependent upon the rate at which the fire can spread over the surface. So if you can -- if it spreads very, very quickly, then the energy that's contained within that product or material will be produced and released much more quickly. Clearly, if a product doesn't spread flame or, you know, just sits there in the exposed zone, then the amount of energy and so on that's released will be much, much slower. So these things are all interdependent and are, you know, key factors in assessing the overall combustibility of a product or material.
MR MILLETT: Mr Chairman, I'm getting a note again from those behind me that the transcript issue is continuing. I don't know whether it is.
SIR MARTIN MOORE-BICK: I think you and I can probably see the same note, which suggests that the problem may be limited to the display screens in this room, which are not working at the moment. But those who are logged on

to Opus I think are getting the feed. I hope that's right.
I'm just going to check with counsel who are sitting over there. Can I ask, are you getting the transcript feed?
MS LEEK: Sir, I am not logged into Opus at the moment. I'm using the transcript on the screen, which isn't coming up.
SIR MARTIN MOORE-BICK: Oh, right.
Well, I think all we can do, actually, is to mention it to those who are in control of the technology and ask that they should try and restore the transcript to the hearing room, but I think those who are using the transcript through Opus are probably still all right and I think we ought to carry on. All right?
MR MILLETT: Very well, Mr Chairman, yes.
I'm sorry about that, Dr Smith. It's a technical problem.
I think I've understood your evidence on the word "combustibility". Did you understand it in this report, when you signed it off, as combustibility in, as it were, the loose sense, in other words capability of burning, as opposed to any technical sense defined or indicated in Approved Document B?
A. Correct, yes.

Q. Right, I see.
Now, can we go back to page 12 {BRE00001353/12}, then, please, in the literature review. There's a heading "Façade Costs", and there you will see table 1 —— in fact, there are three tables —— and what are described as "Types and costs of claddings quoted in AJ, Feb 1998 for overcladding". If you go, please, down the page, you'll see that there's a table 2, "Types and costs of curtain wall", and then over the page to page 13 {BRE00001353/13}, and look at table 3, you will see the heading of that table, "Types and costs of in-fill panels as quoted in AJ, Feb 1998", "Infill Panel Systems", and then the fourth entry down, says:
"Composite panel of 0.5mm stove lacquered aluminium, 3mm polyethylene core, 0.5mm mill-finish aluminium, with insulation and vapour barrier bonded to rear face."
Then there's a cost: "160-210". Do you see that?
A. Yes.
Q. That's ACM with a polyethylene core, isn't it?
A. As we know it now, yes.
Q. Did you not know it then?
A. No.
Q. Why is that?
A. I was not aware of that description of those particular products. I mean, this was the actual description that

we had in relation to those products. We didn't know them as ACMs.
Q. Right. You could see, nonetheless, though, that it had 3 millimetres of polyethylene as the core?
A. Yes, correct, from the discussion —— from the description here, yes.
Q. Can I ask you, what assumptions did you make about its mineral content?
A. What, in ——
Q. In the core.
A. But, what, in relation to table 3 at the time?
Q. Yes, what assumptions did you make ——
A. I would not have made any assumptions.
Q. —— in relation to the mineral core content of the 3 millimetres polyethylene?
A. Yeah, no, I would not have made any assumptions about it.
Q. Right. So can we proceed on the basis that you might have known that it was 100% polyethylene?
A. I would have based any thoughts around the description as provided.
Q. Right.
Were you aware, before you approved this report, that ACM panels with a fully polyethylene core were used in the external wall arrangements of UK buildings?

A. No.
Q. You weren't aware?
A. No.
Q. Did you become aware when you read this table?
A. This would have been the only information that I had.
Q. Yes, maybe, but on the basis that that was the only information you had, did you become aware that this product, as described here, was in use in the UK built environment?
A. In the same way that all of the other products are listed, that would have been my only source of reference, what was written here.
Q. Is that a yes, then, to the question?
A. Well, yes, if these products are the ones that were in use.
Q. Did you ask yourself at the time why it was that composite panels with a 3-millimetre, let it be assumed, 100% polyethylene core were in use on the external walls of buildings?
A. No, I wouldn't have done at that point.
Q. Why is that?
A. In some ways, you know, a lot of these products that are listed here would be potentially products that you might want to further investigate in terms of their fire performance. I mean, I would not personally have had

any knowledge about how any of these products would have performed in a fire situation.
Q. No, but looking at the box and the title in this report, did you not ask yourself, did you not wonder, "I wonder why these panels, as quoted in the Architect's Journal at that time, are in use, perhaps even common use, on tall buildings in the UK built environment"?
A. I don't recall. I don't recall that at all.
Q. No, right. So therefore it wasn't a surprise to you —— is that right? —— to discover that such panels were in use?
A. Well, as I say, I wouldn't have had any knowledge about what was in use at all until I saw this report. I had no preconceived notion. I was not, you know, out there in the real world looking and surveying buildings, so I had no knowledge as to what was in use.
Q. No. I'm afraid that doesn't quite answer my question. My question was really: when you saw this for the first time, did you not react by thinking or asking yourself, "I wonder why it is that there are out there these composite panels with 3 millimetres of polyethylene"?
A. I don't recall that specifically in relation to this, no.
Q. Right. So you weren't concerned to discover it for the first time?

A. I don't recall. I don't know.
Q. What did you know at the time about the fire reaction properties of polyethylene?
A. That it's basically a thermoplastic, and, I mean, one of the performances of thermoplastics is they have a tendency to melt on exposure to heat, and in some cases that actually means that the thermoplastic itself runs away from the fire. But apart from that, you know, we wouldn't have known —— I wouldn't have known how this product, as it's constituted there, would perform in a fire scenario.
Q. You say it has a tendency to melt and run away from the fire.
A. Yes.
Q. Did you not also know that it would burn as it dripped and ran?
A. Yes, yes. I mean, it will burn; it's the extent to which it —— and where it accumulates, in effect, when it's melting and dripping.
Q. Yes. Can we agree this much, at least: that you knew at the time, whatever else you might not have known about polyethylene's reaction to fire characteristics, that it was combustible in all senses?
A. Yes, yes.
Q. In relation to compliance with the guidance as it then

stood in Approved Document B, would there have been any particular reason for concern in discovering that ACM panels were being used to clad high—rise buildings where they had a polyethylene core?
A. That did not —— I don't recall what the discussion would have been around that. As I say, it wasn't specific to that particular product at that time. It was taken in the context of all of the other tables that are presented here as well and the other products, which equally you could look at and see from a fire situation you might want to investigate further. Because, in principle, you know, there were some others as well that you might look at and think: well, I'm not quite sure how that might perform in a fire either.
Q. No. Did you have any thoughts along the lines of how it would be that such panels could comply with the then standing Approved Document B?
A. I don't recall having had that consideration or discussion. I mean, Brian Martin would have led on that sort of area of discussion.
Q. Right. You say he would have led on it; does that mean you were, in some senses, reliant on his expertise?
A. Yes.
Q. Right.
A. Yes.

Q. Was he more of an expert in the field of fire science than you, would you say?
A. No.
Q. So why were you ——
A. No. Brian's area of expertise, I think as we spoke about before, it was on the approved document and the interpretation and so on of the approved documents.
Q. Right. Do you know from your own knowledge at the time whether Brian Martin had any concerns of his own about how it could be that the panels identified in this table with a 3—millimetre polyethylene core were compliant with Approved Document B as it then stood?
A. I don't know.
Q. Did it occur to you at the time, before any experimental testing took place, as we know it did not long after this, that the use of polyethylene in the external wall at height might present a serious danger in the event of fire?
A. I don't recall that one being considered as a special case.
Q. Right. So can we take it that you don't recall any discussion, either within the BRE or with the department, about this issue at the time?
A. Not at that time.
Q. Not at that time.

Did you consider, looking at this document and this product in the table at this time, how it could be that the use of polyethylene in the external wall of a high—rise building could comply with the functional requirement in B4 of the Building Regulations?
A. Not at that time, no.
Q. Did you consider at the time whether ACM PE panels could achieve class 0, whether or not it was an appropriate classification?
A. I don't recall whether we would have had that discussion or not.
Q. Right.
Just trying that slightly differently, on the assumption that these panels would be said to have met class 0, did you simply assume that a class 0 material or product would always meet the functional requirement, or did you think that some class 0 products or materials might not?
A. I don't recall at that particular time.
Q. Right.
A. I think that we were on a —— the whole point of the research project was to investigate these things, and this obviously was the first step in the research project, and that was to be followed by the experimental programme.

Q. Did you consider at this time or did you come to consider whether, given the functional requirement in B4, class 0 was an appropriate classification for a composite product at all?
A. I don't recall at the time.
Q. At the time; did you ever later come to consider that question?
A. I can't remember whether we've had that discussion or not.
Q. And therefore it would follow that, particularly with a combustible core, a panel with a combustible core was something you never asked yourself about or never asked the question: how is class 0 appropriate?
A. Probably not within that context. I mean, the context for this, for me, was always around this research project, what it was seeking to achieve, and then beyond that, obviously later on, the adoption of BS 8414 and the criteria and the introduction of that into the approved document. And then, you know —— so from the outcomes of this research project and the classification criteria that were then derived in BR 135, it was my sort of absolute understanding from thereon in that the door was closed in the use of these types of products and materials in the future.
Q. Well, that would be so, I think —— is this right? —— if

BS 8414 and BR 135 criteria were adopted as the sole route to compliance, but not if you left class 0 in ADB ——
A. Well, I mean our understanding and interpretation was —— and this is where the confusion around the term " filler ", which is now apparent but wasn't apparent to us at the time, obviously had an impact.
Q. Right.
Picking up on your point about the revisions, can we go to page 27 of this document {BRE00001353/27}. You'll find the conclusions of the literature review there. You'll see, Dr Smith, at the top of your screen, the word "Conclusions":
"The main findings from this review have been ..."
Then there are some numbers.
If you look at number 2, it says this:
"The 2000 revision of AD (B) goes some way to addressing the issues of fire performance of external cladding systems, the review of BR 135 will help to clarify any remaining issues as identified."
Now, is that a reference —— just bearing in mind the date of this, which is March 2000 —— to the version of the approved document which came into force in the July of that year, July 2000?
A. I would imagine so, yes.

Q. The previous version was the 1992 second edition, which ran from June 1992 to July 2000, so that must be right.
A. Yes, I —— yes, that's ——
Q. Had the BRE played any role in drafting or advising on or assisting with the 2000 amendments to the approved document?
A. I don't know.
Q. You don't know?
A. No.
Q. Can we take it that you were familiar at the time with the provisions of the guidance in Approved Document B?
A. To some extent, not entirely. I mean, that wasn't the area that I was working in until really this project.
Q. But as a result of working on this project, did you come then to be fully familiar with at least the 2000 version, if not its predecessor?
A. In part, yes. I mean, I wouldn't have an extensive oversight of every element of the approved document. I mean, it wasn't my job and role to be interpreting that on a daily basis, so it would only be on a need—to—know basis.
Q. You say in part.
A. Yes.
Q. Did one of those parts include section 12 —— what became section 12 later, I think section 13 in the 2000

version —— namely external wall?
A. Yes, I would have familiarised myself with it, but I would not be asked to interpret it in the real world, if you get my meaning. It's slightly different. I would not be applying that to any projects or whatever in the external world.
Q. Now, looking at the text of paragraph 2 under the conclusions here, where it says that the revision "goes some way to addressing the issues of fire performance of external cladding systems, the review of BR 135 will help to clarify any remaining issues as identified", what specifically were the issues in relation to the fire performance of external cladding systems that the 2000 revision of Approved Document B, as it says here, had gone some way to addressing?
A. Yeah, I mean, I can't be definitive on that, I wasn't involved in the revisions and so on, but my guess is that this was all related to the parliamentary select committee and the work that they had undertaken, and that's really what then led to the need to embody the classification criteria into BR 135. But in order to sort of validate that, this research project was commissioned by the department to enable that data and information to be collected.
Q. Right. Let's look at the revision.

Can you remember though, before we do, how it was that the 2000 revision of Approved Document B had addressed these issues or gone some way to doing so?
A. I can't remember, no.
Q. Let's look at it, then, to help you.
Can we put up Approved Document B 2000 against the original. I'd like to have both up on the screen. {CLG10000012/89}. The documents provider has done an excellent job in getting there before me.
Now, what we have on the left-hand side is the previous edition, which is the 1992 Approved Document B {BLA00005482/74}, and on the right-hand side what has become section 12 in the 2000 edition {CLG10000012/89}. You can see there that the requirements for external surfaces in both versions are that the external walls of a building over a certain height should meet the provisions of diagram 40. Do you see that?
A. Yes.
Q. It's 12.5 in the 1992 edition on the right-hand side and 13.5 in the 2000 edition.
A. Mm-hm.
Q. Now, both diagrams stipulate class 0, don't they? Let me show you that, page 75 {BLA00005482/75} and page 90 {CLG10000012/90}. So right-hand side if we go forward a page, and left-hand side if we go forward a page.

Both versions there. It's diagram 36 and diagram 40. Both versions there stipulate class 0, don't they?
A. Yes.
Q. The only difference was the height. On the right-hand side, which is the 1992 version, it was 20 metres, and on the left-hand side, 2000 amendment, 18 metres; yes?
A. Yes.
Q. Both say class 0; yes?
A. Yes.
Q. Yes.
In addition, I think it's right that the 2000 edition of the approved document added, if we go back to it, at 13.5 {CLG10000012/89}, under the note:
"One alternative to meeting the provisions in Diagram 40 could be BRE Fire Note 9 ..."
Yes?
A. Correct, yes.
Q. Now, that was new, wasn't it?
A. Yes, I believe so.
Q. And was that one of the amendments that would "go some way to addressing the issues" that was referred to in the conclusions to the literature review?
A. I would assume so, yes.
Q. Right.
Now, it's right, I think, isn't it, that Fire Note 9

was not conceived with the spread of fire over the external surface of the walls in mind, was it?
A. Well, clearly that's one of the things that it's measuring.
Q. Well, let me try it differently.
External surface fire spread -- a cladding system on fire is another way of putting it -- was not the problem which Fire Note 9 was seeking to solve, was it?
A. My understanding was that, yes, it was looking at the fire performance of external cladding systems in the round and, therefore, that is one of the aspects that it would be looking at.
Q. There's not very much in BR 135, as it then turned into, in 2003 about external fire spread, is there?
A. In BR 135?
Q. Yes, as it turned into.
A. I'm not following you, sorry, which version?
Q. We'll come to it.
A. Yes.
Q. We'll come to it. But in fact, Fire Note 9 was a full system test, wasn't it?
A. Correct.
Q. It wasn't measuring or quantifying the external spread of flame?
A. Not in isolation.

Q. No. And in fact, on this and later amendments to Approved Document B, an external wall product like a panel did not have to meet the requirements of BR 135 through a BS 8414 test; it simply needed to satisfy class 0.
A. Well, that was not my interpretation of what was in there, but I guess we'll come to that later.
Q. I see.
A. Yeah.
Q. Well, then, if that wasn't, could you just explain 13.5 to us? 13.5, which is the amendment made in 2000, says:
"The external surfaces of walls should meet the provisions in Diagram 40 ...
"Note: One alternative to meeting the provisions in Diagram 40 could be BRE Fire Note 9 ..."
So you didn't have to satisfy --
A. No, I accept that in this context, yes, yes.
Q. But they were always alternatives, weren't they? That never changed, not until 2018.
A. The 2006 version also has some text in there about the performance of the insulation.
Q. Yes. Well, we're not talking about insulation though, are we? We're talking about the external surfaces of walls, which is what diagram 40 is about.
A. Yes, but it also -- I mean, this is where the paragraph

in the 2006 version also refers to " filler material", and, you know —— so within that context, it's not as simple as what's written here in the 2000 version.
Q. That may be so. It may have become complicated, and we'll come to that in due course.
Dr Smith, forgive me for taking a long historical run—up to this, but at this point in time, it's right, I think, that the partial cure to the issues that the industry was seeing and which your literature review was addressing was met by the introduction of what became BRE 135, but Fire Note 9, as an alternative to meeting diagram 40.
A. Correct.
Q. Yes.
Now, turning to insulation, if we look, please, at the right—hand side and go back a page to page 74 {BLA00005482/74}, which is the 1992 version of Approved Document B, that required insulation in the external wall construction, as you can see in 12.7, "External wall construction" —— can you see?
A. Mm—hm.
Q. It says in the second paragraph there:
"In a building with a storey at more than 20m above ground level, insulation material used in the external wall construction should be of limited combustibility

(see Appendix A)."
Then you have the exception for masonry cavity wall constructions. Do you see that?
A. Yes.
Q. Then if you look to page 89 on the left—hand side {CLG10000012/89}, in the 2000 version of Approved Document B, if you look at what became 13.7, "External wall construction", you can see that the second paragraph has been amended, and it now says —— we can compare the two:
"In a building with a storey 18m or more above ground level, insulation material used in ventilated cavities in the external wall construction should be of limited combustibility ... "
Can you explain the rationale for the introduction of the words "in ventilated cavities"?
A. No, I can't.
Q. It's a narrowing, isn't it, of the circumstances in which the guidance asked for insulation to be of limited combustibility?
A. It certainly appears so, yes.
Q. You don't know why that was?
A. No, I don't.
Q. Did you ever notice it at the time?
A. No, I don't believe I did.

Q. You didn't notice it at the time, so that would tell us there was no discussion within the BRE, to your knowledge, of that narrowing?
A. Well, not that I was involved in. I mean ——
Q. No. Can you tell us from your own knowledge who suggested it or how it came about?
A. No, I wouldn't know that.
Q. Right.
A. But, I mean, the people that were working in that area, as we spoke about on Friday —— Thursday, sorry, would have been Tony Morris and potentially a colleague of his, Richard Reed, who were involved in this area.
Q. Right. What about Brian Martin, who I think you told us was ——
A. Yeah, I can't remember when Brian joined, so I don't know how much involvement he would have had in the 2000 version of the approved document, but, I mean, he would be able to answer those questions, I'm sure.
Q. Right.
Can you recall when you became aware for the first time that the 2000 version had amended and narrowed the restriction in relation to insulation material in the external wall construction?
A. No, I don't remember.
Q. Right.

Let's look at the functional requirement.
Can we please have up on the screen page 72 of the document on the right {BLA00005482/72} and page 86 of the document on the left {CLG10000012/86}. The one on the left is a little bit fuzzy because of the copying, but we'll do our best with it. I hope you can see it.
A. Yes.
Q. On the right, which is the 1992 version of the functional requirement, it says:
"B4.(1)The external walls of the building shall resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."
Then in 2000, that's amended, as you can see, to the words:
"The external walls of the building shall adequately resist the spread of fire over the walls ... "
So you can see that the word "adequately" has now been inserted into the functional requirement in 2000.
A. Yes.
Q. Yes? So we've moved from resisting external fire spread altogether to resisting it adequately; yes?
A. Yes.
Q. Do you have any recollection yourself of that amendment?
A. No.

Q. Do you have any recollection of any discussion about the reasons for that amendment?
A. Not that I was involved in at all, no.
Q. Do you know anything about the background to that amendment?
A. No.
Q. When did you first learn, if you ever did, of that amendment?
A. Yeah, I'm not sure I learned of it being a difference. Obviously the 2000 version would have been the first version that I would have looked at in the context of this particular project. So, yes, I don't know why that was put in there or where it came from.
Q. No. But you don't remember when you discovered that the word "adequately" had been inserted into the 2000 edition?
A. No.
Q. Was this not something that you were looking at as part of your literature review and the amendments leading up to the July 2000 amendments?
A. Well, obviously I wasn't involved in the detailed work on the literature review, I was the approver of the report. So unless it was brought to my attention at that point, I wouldn't necessarily have been aware of it.

Q. Did anybody give you a briefing before you signed off as the approver of the conclusions, which include conclusion 2, of the proposed amendments to Approved Document B?
A. In terms of what timeframe? What do you mean, the proposed amendments?
Q. Let's take it in stages.
You signed off as approved the literature review with its conclusions on 30 March 2000.
A. Yes.
Q. Before you did that, did anybody give you a briefing on the proposed amendments of Approved Document B or, indeed, the functional requirement?
A. Not that I can recall.
Q. Right. So when you signed it off, what was the state of your knowledge about what those proposed amendments were?
A. I don't recall. I mean, I would have signed the report off based upon the content of the report as provided to me, so the text that would have been, you know, included within the report.
Q. But if you didn't know what the proposed amendments were, how could you sign off a report that said that they went some way to satisfying the issues?
A. Well, in the content of the report it explains what -- well, if it doesn't explain that, then somebody would obviously have told me -- must have told me that they were going to refer to Fire Note 9, I guess.
Q. Right. Anything else?
A. But I don't recall first-hand. I'm just trying to unpick the context and roll my mind back, but it's a long time ago.
Q. Right.
Now, I don't want to ask you about the meaning of words in a statutory piece of guidance, but did there come a time when you had your own understanding about what the word "adequately" connoted?
A. No, it was always a point that was a point of debate amongst the industry as well, as to who defines what is adequate.
Q. Now, you say it was always a point of debate; when did that debate begin?
A. Well, I became aware of it probably in the 2000s at some point.
Q. Right.
A. You know, attending conferences and seminars and so on, and just picking up those sorts of discussions that would have generally happened.
Q. So there did come a point, then, that you learnt about the insertion of the word "adequately" into the

functional requirement?
A. Well, I'm not sure it would have been in the context of, "This has just suddenly appeared"; it would have been in the context of, "This exists, who defines what is adequate?"
Q. You say in the 2000s at some point the debate began about what the word "adequately" meant. What was the answer -- sorry, I'll start again.
Did the BRE itself ever give an answer or suggest an answer to that question, to your knowledge?
A. Not to my knowledge, no. That would not have been -- my view is that would not have been our role to have done so. That is a matter for -- because it exists in the statutory requirements, it would be a matter for government to define what is adequate and what is suitable.
Q. Do you recall an occasion on which government was ever asked that question?
A. I don't personally.
Q. You don't personally recall?
A. I'm not aware of when -- you know, if industry asked for clarification around what "adequate" meant, I don't know.
Q. Did it ever occur to you, as the points person at the BRE, to ask government, Anthony Burd or Brian Martin

perhaps, about why it was that the word "adequate" was inserted and what was meant so that you could tell your clients?
A. Again, I mean, if anybody had asked us to define "adequate", then we would have referred them to the department for that discussion. We would not provide that advice and we would not, you know, discuss that particularly with our clients.
There's clearly different ways to define and to demonstrate adequacy. I mean, certainly it's a point that the department were very well aware of because, you know, they sat in some of the workshops and conferences and so on and would have heard the same questions. So, I mean -- but only they can answer to if they were ever asked and then how they responded to that.
Q. Can we just understand, despite the debate, as you say, which started some time in the 2000s, the BRE, to your knowledge, never took that up with government and said, "Look, you need to clarify this because there's a debate"?
A. We would have raised it with them and said, you know, there's an issue around adequacy.
Q. Oh, you did?
A. And they were fully aware of that anyway because, you know, they sat in some of the same discussions that

I was personally sat in or other people from BRE were sat in.
Q. Okay. Let's just break that down.
So you recall sitting in discussions, do you, with people from government and discussing the meaning or the intended meaning of the word "adequately"?
A. Well, not necessarily discussing the meaning of it, but where -- the issues around: well, what does "adequate" mean?
Q. Yes. Well, that's a better way of putting the question --
A. Yes, but not necessarily providing an answer to the question.
Q. And what did government say during those discussions?
A. I don't recall. I mean, you would need to -- I suspect that people wouldn't have given an answer there and then. They would have to take that back and it would have to be an agreed response to something like that. It's not something that one individual would be able to sit there and define.
Q. No. I'm not asking, really, about whether somebody could define it, I'm just really getting your recollection of the discussions, who said what and when about the word "adequately".
A. Yeah, no, I can't give you chapter and verse in that

respect.
Q. Can you give us the gist?
A. Well, I think it's as I've already described. I mean, people would say, "Well, who -- what does 'adequate' mean within this context and who defines it?"
Q. But you're talking to government; who was it you were discussing it with?
A. I would have discussed it with Anthony Burd.
Q. Yes. Anybody else?
A. And potentially Brian Martin.
Q. Right. Do you remember what they said about the word "adequately"?
A. I mean, they will need to answer to that themselves. I mean, my view is and my recollection is that, initially anyway, their view was, "Well, yes it's a little bit vague, isn't it?"
Q. Right.
A. It's not definitive.
Q. No.
A. But then there's a lot of, you know, other regulation that I guess you could argue -- not necessarily in the fire context as well, that is similar.
Q. "It's a little bit vague."
Were you not interested to know why a word which introduced vagueness into an otherwise absolute

provision had been inserted?
A. I mean, it really wasn't for me to question what the government had decided to do in terms of their own legal framework.
Q. I wonder about that. Let me try it differently.
Can you help with this: when BRE(sic), second edition, 2003, was in production, so between the date of the literature review and sometime in 2003, and therefore after the word "adequately" had been inserted into the functional requirement, to your knowledge, Dr Smith, did anybody at the BRE ever consider whether meeting the criteria in BR 135 would satisfy the word "adequately", so that you knew that if you passed BR 135, the performance of your external wall would be adequate for the purposes of the functional requirement?
A. My understanding is that that would have been discussed and it would have -- the fact that it was accepted and the research as it was carried out was all presented, that then was accepted as a demonstration of adequacy.
Q. If "adequately" was vague, how did they know, how did anybody know, how did the BRE know, that the outputs from a BS 8414 test meeting BR 135 criteria would satisfy?
A. Well, in terms of the support for the outputs from the project, and also the commitment from the parliamentary

select committee to acceptance that the -- what was then, I think, Fire Note 9 was suitable and needed to be adopted within the guidance.
Q. But if there were no criteria, objective criteria, by which to measure the word "adequacy", how did you know whether the outputs from a BS 8414 test meeting BR 135 would satisfy the word "adequate"?
A. Well, I think it was implicit in the fact that the standard and the document, BR 135, were accepted.
Q. Let's go back to the third conclusion, then, of the literature review, page 27. That's {BRE00001353/27}.
Conclusion 3:
"The work to date suggests that a large-scale test method is necessary to assess the performance of the complete system."
Now, that was not a new discovery, was it, as at spring 2000?
A. No.
Q. I think you agree with me, it had been noted in Fire Note 3 and Fire Note 9?
A. Correct.
Q. Yes.
Had you or Sarah Colwell or Brian Martin, for that matter, previously considered that small-scale testing of individual components of a cladding system to the

BS 476 standards could "assess the performance of a complete system"?
A. Yes, I believe people had considered that. So probably Sarah had in her earlier involvement in the -- was it Fire Note -- I don't know if she was involved in Fire Note 3, but certainly Fire Note 9, and, yes, I discussed it and I would have discussed it with Sarah at the time.
Q. During the course of this project, was any consideration given, either within the BRE or in discussions with the department, to limiting all elements of the external wall construction, or at least all significant elements of the external wall construction, to materials or products of limited combustibility or non-combustible?
A. I don't know.
Q. You don't know one way or the other?
A. No.
Q. Does that mean you can't remember or --
A. I don't know one way or the other. I don't know if any discussion took place between other people and the department around that particular issue.
Q. Right.
Other than your own knowledge of the 2000 amendments to Approved Document B, such as it was, which I think, accept from me, did not implement the recommendation of

the select committee to have BS 8414 in place of class 0, what was your own state of knowledge at the time of whether the department would follow the select committee's recommendation that all external cladding systems should be required to be entirely non-combustible or tested to full scale?
A. I think in 2000, when this project was initiated, the view was that obviously a number of things needed to be put in place. Obviously, we didn't have BS 8414 at that particular time, it was still Fire Note 9, so that then had to be developed and published and so on and the classifications published. So it was almost like a journey in terms of the implementation of the recommendations from the select committee.
Q. Yes.
A. And that was my expectation, that that was where this was all heading.
Q. Did you ever have any discussions with Anthony Burd or anyone else from the department about whether class 0 should be dropped?
A. Well, not at that time because there was nothing to replace it with.
Q. Well, you had the arriving Fire Note 9 which then became BS 8414.
A. Yes, but it hadn't arrived in 2000, so we were on that

journey, if you like.
Q. Right.
A. So -- yes.
Q. You say you were on a journey; did you and Anthony Burd or anybody else in the department ever discuss at what point that journey would end and class 0 would be dropped?
A. I mean, obviously we understood and BRE understood that the changes would be made at a revision point within the cycle for the approved document, and that -- because that's typically how it works. So once the British Standards were ready and published and so on, then at the relevant point in the cycle, those would then be adopted, and that was the expectation at that time.
Q. I see. And when was the next revolution of the cycle?
A. Well, we understood -- obviously that emerged to be 2006.
Q. Right.
A. I think it was like a five or six-year revision cycle typically around that time.
Q. And what was it about Fire Note 9 that meant that it couldn't be adopted straightaway as the full-scale test in place of class 0?
A. I think it was mainly the fact that in the approved document it predominantly refers to either national or

European or international standards, and, clearly, Fire Note 9 was none of those. It was, if you like, a BRE in-house standard. So it was felt that it then needed to go through the standards-making process and be opened up to full discussion and consultation with the industry and all the stakeholders at large to improve the standard in the way that you would expect for a British Standard. There is, you know -- a different process is gone through.

Q. Was it your expectation that class 0 would be dropped, then, come the next iteration of Approved Document B?

A. I don't recall exactly what the expectation would have been around that, because this was all also complicated by the introduction of the European test standards as well during this period.

Q. Yes, which came in in a 2002 amendment.

A. Yes, I believe so.

MR MILLETT: Mr Chairman, I'm going to turn to a new topic, or vaguely new topic, but I won't finish it before the break, but I do think I should make a start on it.

SIR MARTIN MOORE-BICK: Oh, do, yes. We started a little late, I'm afraid, so that's perfectly all right.

MR MILLETT: Right, thank you.

Can we then look at {BRE00041836}, please.

SIR MARTIN MOORE-BICK: This is a new area of inquiry?

MR MILLETT: It's a continuing but semi-new area of inquiry.

SIR MARTIN MOORE-BICK: In that case, can I just raise a question which I don't think you've answered already, and, if you have, I apologise for asking it again. It concerns how Fire Note 3 and Fire Note 9 came into existence. The intention was, as I understand it, to produce a test which would demonstrate compliance with B4, functional requirement B4; is that right?

A. That's my understanding.

SIR MARTIN MOORE-BICK: Since functional requirement B4 either did at one stage not include the word "adequately", so it just said "resist fire" without providing any numbers, someone must have taken a view when formulating Fire Note 9, let's say, as to what the criteria should be.

A. Mm-hm.

SIR MARTIN MOORE-BICK: Do you know how that was done and who did it?

A. I'm afraid I don't. I mean, it would have been Tony Morris and his coworkers at the time, because he was leading on all of that work.

SIR MARTIN MOORE-BICK: So it sounds, as far as you know, that we can assume that those who were doing that work took a certain view of the extent to which fire resistance was required, whatever the wording of the

time --

A. Mm-hm.

SIR MARTIN MOORE-BICK: -- and built that in to Fire Note 9, which became BS 8414?

A. That would be my understanding, yes.

SIR MARTIN MOORE-BICK: All right, yes. Thank you very much.

Yes, thank you, Mr Millett.

MR MILLETT: Yes, thank you.

Can we then turn to the document which I want to look at, which is the bid document {BRE00041836}. If we just have a look at page 1, just to refresh all of our memories about this document. This is the bid by BRE to undertake work for DETR under the framework agreements. This was the title:

"Review of fire performance of external cladding systems and revision of BRE report BR135."

Which at that stage was a 1988 edition.

If we go to page 3 {BRE00041836/3}, you can see that on that page there was a proposal that the BRE should undertake a survey of current stock in relation to the cladding of high-rise buildings in the UK. You will see that under the specific objectives, first bullet point.

A. Yes.

Q. That was accomplished by compiling a six-page

questionnaire for completion by a selected number of relevant local authorities, wasn't it?

A. I believe so.

Q. Yes. Let's go to the questionnaire. That's at {BRE00041885}, please. It's entitled "BRE External Cladding Survey", and you can see there are some numbers down the left-hand side, ages of buildings. Do you see that?

A. Yes.

Q. Did you approve that survey?

A. I don't recall. Possibly I did.

Q. Right.

A. It would also have had to have been approved by the department before it went out.

Q. Yes.

A. Because they had to approve anything where you were surveying industry.

Q. We can scroll through it to see the nature of the questions. You've got the number of units above 18 metres, the age group of the buildings, refurbishment, types of cladding, and if you turn the page to page 2 {BRE00041885/2}, you can see "Render Systems" or "Rainscreen Systems".

Then going down to page 3 {BRE00041885/3}, please, you can see infill or built-ups, and then you have kinds

of fibre —— underneath paragraph 8 —— insulation, mineral or polymeric, and then if you go over the page {BRE00041885/4}, of the polymerics, under 8.2, you're asked whether they're EPS, PUR, PIR or phenolics. Do you see that?
A. Yes.
Q. If we go to page 4, lower down, you can see the respondents are asked about firestopping and whether they are aware of the use of cavity barriers; yes?
A. Correct.
Q. At page 5 {BRE00041885/5}, question 11, you can see it says:
"Have you had any incidents involving fire spread due to external cladding systems, any details would be appreciated."
Yes?
A. Yes.
Q. Now, for that, I think it's right that the BRE then created an Excel spreadsheet to record the responses to this survey. Let's look at that. It's at {BRE00041886}. It's the next document on, actually, in the series. That is an Excel spreadsheet, so we'll need the native version of that, please.
These take some time to pull up because of the nature of the document, so just bear with us, Dr Smith,

please.
Now, that is the Excel spreadsheet. If we can go to the first tab, "Introduction", which I think we're on, you can see that it records, just over halfway down, the text inside the box which starts "To date", you've got 45 surveys that have been distributed, 17 responses have been received and, of those, three were nil returns, one is still trying to provide the data and 13 full returns were provided.
A. Mm—hm.
Q. Do you know why only 45 questionnaires were sent out?
A. No, I don't.
Q. You don't know who took that decision?
A. No.
Q. Do you know who chose the list of recipients?
A. Typically, in these sorts of instances, it would be discussed between our project team, our project manager and the department.
Q. I see. Were you party to those discussions?
A. No, I wouldn't have been.
Q. Do you know on what basis these organisations were selected?
A. No, I don't.
Q. You can see that one of the organisations was WS Atkins, and if you go, please, to {BRE00041886}, to the sheet

entitled "Survey Responses", you can see, if you go to column C, WS Atkins, and they are type 1. Type 1, take it from me, is a specifier.
Do you know what kind of organisation WS Atkins was?
A. In this context, so presumably then they were specifying what went on to buildings.
Q. If we go down, then, to row 54 in column C, if we scroll down to 54, question 11, there's a "Yes", and there's a note that's added to the cell, if we can just open up the note. I think you may have to enable editing to do it. If we can open the cell, we have some of the text but not all of it, which I'll have to ask you to take from me. It says:
"BRE: Spread of flames generally rapid due to loss of integrity of [and the words that follow, take it from me are] composite aluminium panels using combustible cores."
Now, can you help us, is that a note of what was recorded on WS Atkins' survey response, particularly at question 11?
A. I don't know. I would assume probably yes, but I don't —— I can't be definitive about that.
Q. Right.
Did you or to your knowledge anybody else, either in the BRE or in government, contact WS Atkins to find out

what the composite aluminium panels using combustible cores were?
A. I don't know.
Q. Were they ACM with a PE core or a sandwich panel or infill panel or the like?
A. I don't know.
Q. Did you see this spreadsheet at the time?
A. I would have probably seen it as part of the pack that comes to you for approval of the report.
Q. Did you open up the cell that I've just opened up?
A. I don't recall. I don't recall.
Q. Do you recall any discussion at the time about WS Atkins' discovery?
A. I don't recall that, but clearly, you know, the responses to the questionnaire, et cetera, were then used to help formulate the experimental programme.
Q. Right. Yes, I see that.
Was this spreadsheet sent to the department or did it remain an internal BRE document?
A. I don't know. I would imagine it probably did get sent, but I don't know. Others would know that.
Q. Right.
Let's look, then, at another document, {BRE00041887}. Now, this is the project report dated 24 July 2000. It was issued to Anthony Burd outlining

the results of the BRE's cladding survey, and it provided various options for large−scale and experimental studies.

Let's go to page 2 {BRE00041887/2}. You can see that the report was prepared by Sarah Colwell and approved by you; yes?

A. Correct.

Q. And at page 6 {BRE00041887/6}, if we go to that, you can see "Survey Responses" and the report says there, underneath:

"Forty five questionnaires were issued of these 17 responses were received. Figure 1 summarises the categories and responses received. The number of responses received were less than expected."

In fact, it is right, isn't it, that there were only 13 full responses?

A. Based on what you showed earlier, yes.

Q. Do you know why the BRE didn't issue further surveys to other organisations when it became apparent that the response rate was so low?

A. I don't. I mean, I'm pretty sure that this would have been discussed with the department at the time and there would have been some follow−up to those where there had been no response received at all.

Q. With only about a third of the organisations actually

responding to the BRE survey, do you know how the BRE or government could gain a proper and comprehensive understanding of the current industry practice in relation to the overcladding of building stock in the United Kingdom?

A. I'm sure this would have been discussed between the project team and the department at the time, and then the decision would have been taken jointly.

Q. Jointly? Right. So it was a joint decision, was it, to proceed without issuing further surveys to other organisations to get a better data set?

A. Well, we would have sought the view of the department as to whether they felt it was adequate or not.

Q. Did anybody from the department suggest to you that perhaps more data than 17 or even 13 responses was needed and more surveys should be sent out?

A. I don't know.

Q. If we look at page 10 of this document {BRE00041887/10}, there's a heading, "Survey Conclusions". You see it concludes as follows, the first bullet point:

"Based on this survey it would appear that although the number of responses have been limited they provide sufficient data to form a consistent view of the types of external cladding systems used in the public housing sector."

On what basis was that conclusion reached, do you know?

A. No. I mean, I would anticipate, reading this now, that it would have looked at the types of responses that we were getting back, and if there was a consistency in the responses that we had had, that would have been what would have, you know, dictated that conclusion.

Q. Did you yourself have a view at the time about whether this was a sufficient data set on which to form an opinion?

A. I don't recall at the time. I'm sure we would have had some discussion around that. Clearly, one of the things that would have been looked at as well would have been who −− you know, which areas or which local authorities or so on would have responded.

Q. If we go to figure 1 on page 7 {BRE00041887/7}, which is back three pages in the report, you can see there that −− we need to expand the table, please, if we can do that:

"Figure 1. Questionnaires returned by respondent type."

You can see there that it looks as though the number of surveys actually returned by local authorities in England was five, yes? It's the little purple or burgundy−coloured −−

A. Yes, yes, I see that.

Q. And three in Scotland, one of which was a nil return.

A. Yes, I can see that.

Q. And one in Wales; yes?

A. Yes.

Q. So a total of eight?

A. Yes.

Q. I think it's also acknowledged, if you look at the final paragraph on the same page, if you scroll down to that, please, that, and I quote, under the heading "Specifiers and Suppliers":

"The suppliers and specifiers identified a total of 193 units, but it has not been possible to quantify how many of these units are duplicates of those already provided by the local authorities."

Now, just pausing on that sentence, and taken together with the table, do you agree that this is really quite a long way from the comprehensive survey of the UK building stock that was proposed in the bid for this contract?

A. Well, the results −− the issue with a lot of these types of surveys is, indeed, in getting the responses back. I mean, it's very difficult to get busy people to respond and to see the need to respond. And it also probably points to the fact that a lot of the local

authorities didn't actually know the answer to a lot of the questions.
Q. Well, let's just see.
If we just go back, please, to {BRE00041836/5}, we looked at this earlier but I just want to revisit it in the light of the answer that you've just given us.
This is the bid document we saw, and the heading "Programme of Work and Method Statement". Under the title or heading "Preferred Approach" at the start of the page, it says:
"The approach adopted in this proposal is to provide the Department with information relevant to actual construction practise. This information will be derived from a comprehensive survey of the U.K. building stock which will form the basis for DETR to specify generic external cladding systems for experimental investigation."
It's clear that you were bidding for a contract in which there would be a comprehensive survey of the UK building stock.
Now, it's right, looking at the responses we have seen, that at that stage you hadn't done a comprehensive survey, had you?
A. Well, as I said earlier, I mean, it would have been discussed at all stages with the department, with the

fact that we were getting a lot of no responses, I guess, or nil returns, and the department, in discussion with us, would have decided if that was adequate or not.
Q. Presumably they did, did they?
A. Well, yes. The fact that the project continued, that must have been the conclusion.
MR MILLETT: Mr Chairman, I have three questions left on this line before turning to a slightly different line of questions on the same document.
SIR MARTIN MOORE-BICK: Yes.
MR MILLETT: If you go, please, to page 10 of the survey, that's back at {BRE00041887/10}, at the second bullet point in the middle of your screen, it says:
"Whilst no one clear system was identified, the majority of systems used by local authorities appears to be the render based systems, with rainscreen systems representing around 12% of the market."
Did you yourself genuinely consider that conclusions based on such a limited data set, 13 responses from local authorities and only 12% of the market for rainscreen, some of which was duplicated, could truly have been considered to be representative or reliable?
A. Well, this conclusion is obviously based upon the information that we had and the survey returns that we'd

had. As I say, I think part of the discussion would have been which authorities had actually responded as well, because obviously some have, you know, much bigger areas of responsibility and many more buildings than others.
Q. Did you yourself consider at the time that such a limited data set was appropriate as the basis for a government-funded experimental testing programme of such importance to fire safety?
A. I'm sure we would have discussed this, as I said, at the time, yes.
Q. Yes. You said that, and I just want to know whether you yourself, in your own head, thought that this limited data set was safe and sufficient?
A. I would have been guided by the discussions that had happened and whether -- as I say, I think a key element of that would be who had responded in terms of the local authorities, et cetera, as well, which -- and if the department had considered that this was adequate to move forwards, then that's what we would have done.
Q. That's not quite answering my question. I would like to know your own view at the time.
Did you think that this data set was sufficient and safe or did you not?
A. I must have been convinced that it was okay to continue.

Q. Who convinced you?
A. Well, I'd have been convinced by the information that was being presented to me and, you know, the fact that we were going to proceed to the experimental programme.
Q. Were you convinced by the nature of the data or were you convinced by a person being persuasive?
A. I don't recall. I mean, it would have been a bit of both, I think.
Q. And can you explain, if you considered it yourself, why it was that such a limited data set was adequate for this purpose?
A. Well, I guess as well, factored into all of this would have been that there was some degree of time imperative in proceeding, based upon the pressure that the department was probably under from the select committee. And, you know, you could, in an ideal world, say, "Well, we're going to spend, you know, a considerable length of time to try to get more responses back", and I'm sure a lot of effort would have been put into chasing up questionnaires and responses anyway, but you reach a point where you have to decide whether you have enough information and you're going to progress or you're not.
MR MILLETT: Yes, thank you.
Mr Chairman, is that a convenient moment?
SIR MARTIN MOORE-BICK: I think it is, yes.

It's time we had a break, isn't it, Dr Smith? We'll stop now. We'll resume at 11.45, please. Again, please don't talk to anyone about your evidence while you're out of the room.
THE WITNESS: Thank you.
(Pause)
SIR MARTIN MOORE-BICK: 11.45, please.
(11.32 am)
(A short break)
(11.47 am)
SIR MARTIN MOORE-BICK: All right, Dr Smith?
THE WITNESS: Yes, thank you.
SIR MARTIN MOORE-BICK: All right, let's keep going.
Yes, Mr Millett.
MR MILLETT: Yes, thank you, Mr Chairman.
Dr Smith, if we can please carry on with the document we were on, {BRE00041887/10}, please, you can see there there's a heading, "Fire Breaks", and in the second sentence of that paragraph underneath it, it says:
"The use of fire barriers appears to be very sporadic and typical responses included 'only fitted when asked' or 'unknown'."
Just focusing on that sentence, did that cause you concern at the time?

A. I suppose the fact that it's mentioned there is a flag that, yes, there are issues around the use of fire barriers.
Q. It's right, isn't it, that at this point cavity barriers had been recommended for more than a decade by Approved Document B?
A. Correct.
Q. Do you know whether any action was taken in response to this finding?
A. I don't know if any action was taken at that particular time, no. No, I don't.
Q. You don't know?
A. No.
Q. You didn't follow up or seek to find out whether action was being taken?
A. No.
Q. Why's that?
A. This was a finding of the research, and the research obviously was only part-way through.
Q. Did you have any discussions that you can recall about that topic with Anthony Burd or Brian Martin?
A. I don't recall.
Q. You don't recall?
A. No.
Q. Do you know whether Sarah Colwell was involved in any

such discussions with them or with you about this topic?
A. I don't know whether Sarah would have discussed it with them or not. I mean, the fact -- sorry, just to say, I mean, Brian obviously was part of this research anyway, so Brian would have been aware of this.
Q. Right.
A. Yes.
Q. Yes.
Can we then go to page 12 {BRE00041887/12} and look, under the heading "Procurement", at the second paragraph there. It says this:
"It is evident that the insulation industry has a number of highly active lobbying groups. The approach taken by the two main factions: the mineral wool manufacturers and the polymeric core suppliers has been one of highly aggressive marketing against their opposition. This has led to several articles in the construction press."
What was the basis for those observations?
A. I can't recall the specifics, but, I mean, I guess we were aware of some activity in the construction press, as this says.
Q. Do you know to which manufacturers this report was referring there?
A. It was more likely to refer to the trade associations

associated with, you know, the different generic types of manufacturers.
Q. The factions that are identified are manufacturers on the one hand and suppliers on the other, not trade associations. Do you know who the manufacturers there and the suppliers there were?
A. Not at this point in time, no, I don't.
Q. Later?
A. No, I mean sat here today, I can't recall, sorry.
Q. Right. Do you know whether the department was given the identity or knew the identity of the companies this report was referring to here?
A. I would imagine they probably were, yes.
Q. But you didn't have any discussion about this factionalisation?
A. Not me personally.
Q. Who, then, at the BRE, can you help?
A. Well, again, it could very well have been Brian Martin and/or Sarah Colwell.
Q. Let's look at the next paragraph on that same page. It says this:
"Should the department [choose] to partner these companies for the supply and installation of their products for this project, they should be aware of this background. Experience suggests that the industry

sector will wish to ensure the maximum publicity from this work to the detriment of their opposition and this may prove difficult to manage. In addition, it is important to ensure that the work is independent and free from undue commercial influence, which is difficult to control when partnering with industry. Whilst we are happy to work with these organisations it may be more politically expedient to purchase the materials and services on the open market in order to ensure that a level playing field is maintained in the market place."

Now, the companies, of course, manufacturers and suppliers, are not named in the report. Was it your understanding that the department would need to know who they were in order to be informed properly when making decisions on partnering with industry for the supply of products for the project?

A. Yes, and I'm sure those discussions would have taken place.

Q. Why are you so sure?

A. Because they would want to understand what the background to this would be.

Q. Coming back to the point, were you party to those discussions?

A. Not that I can recall.

Q. Right.

What was the experience that suggested that industry would seek to ensure maximum publicity from any partnership to the detriment of their opposition, as it says here?

A. Well, that's not terribly unusual, really, with the industry at large. It's not just, I think, the insulation industry. You get the same sort of tendencies in other sectors as well. If they see a result that is particularly favourable in their view to their particular type of products, then they will seek to gain marketing advantage from that. So, you know —— and especially if it is done under a government contract, you know, as shown in government research carried out by whoever, BRE or whoever else it might be, because, you know, they regard that with a higher degree of kudos.

Q. Was it your own experience that it was difficult to control the independence of work and keep it free from undue commercial influence when partnering with industry?

A. It's more difficult if you're partnering with them, where you're relying on them to basically supply products and materials. Whereas, I mean, as proposed here, if you go to the open market and use

an independent third party to procure directly from suppliers and building suppliers, then you've got product that is actually taken out of the market ——

Q. Yes, I see that.

A. —— and the supply chain.

Q. Do you know whether products for this programme were actually purchased on the open market?

A. I believe they were, yes, and that's probably as a consequence of these observations.

Q. Looking at this paragraph and hearing your answers just now, Dr Smith, can we take it from that that, as early as 2000, you —— the BRE, certainly —— had good reason to be sceptical of the manufacturers in the insulation industry?

A. Well, and other factions within the construction industry in general.

Q. Right, to the extent that you saw fit to warn government that those manufacturers and perhaps others may try to influence research for their own financial benefit in a way which might be difficult to control?

A. Yes, especially at this particular time because, as I say, I think there was a lot going on at that time, as evidenced by articles in the construction press at the time.

Q. Just give us a hint of what that was. What was going on

that might aggravate or exacerbate the attempts by manufacturers and suppliers to influence the research in that way?

A. Not necessarily to influence the research, but in terms of, you know, the aggressive marketing that was evident at the time.

Q. Now, sticking with this document, I want to ask you some questions about the experimental testing programme.

If we stick with page 12 {BRE00041887/12}, you can see lower down the page, if we scroll down, there's "Option One — Fire Note 9", and that says:

"From the information provided in the survey and in order to address the trends towards increasing thermal and acoustic performance in the residential housing market, the following experimental programme is proposed. This option does not provide any indication of the performance of built—up systems or preformed insulation panels. The tests would be carried out in accordance with BRE fire Note 9 using the existing test facility at BRE Cardington."

Do you see that?

A. Yes.

Q. Then if we just read down, you can see there's "System Type One" with U—values, and that has:

"Set 1 Rendered systems — No fire barriers, standard

fixings.
"▪ Test 1 – Mineral Fibre ...
"▪ Test 2 – Expanded Polystyrene ...
"▪ Test 3 – Phenolic ..."
Then you repeat that again with fire barriers.
Then if you turn the page {BRE00041887/13}:
"System Type Two – Equivalent 'U' value for System Type One.
"... Ventilated Rainscreen ... No fire barriers.
"▪ Test 1 – Metal faced panel on metal rail ...
"▪ Test 2 – Non combustible panel on wooden battens (mineral fibre insulation).
"▪ Test 3 – Class 0 panel on metal rails (mineral fibre insulation).
"▪ Test 4 – Class 0 panel on wooden batten (mineral fibre insulation).
"Repeat Set 2, Tests 3 and 4 with fire barriers."
I've taken that quite quickly.
Then there are some costings at the bottom of each of those options.
Who designed that testing programme; do you remember?
A. I don't recall, but I would anticipate that that was done by the project team, which would have obviously been Sarah Colwell, Brian Martin and others involved in,

you know, the project on a day–to–day basis.
Q. Right. What was your own involvement?
A. I wouldn't have had any involvement in the design of the experimental programme and the options, other than being asked, I guess, at some point to approve the report.
Q. Do you know how the various components were chosen?
A. No, I don't.
Q. Do you know what the technical or practical rationale for choosing these products and, in particular, the particular cladding configurations was?
A. No, I don't. I mean, I guess it would have been guided in principle by the responses to the questionnaire and so on as well.
Q. Right.
Can we look at page 13 {BRE00041887/13}, please, which is "Option Two – Modified Fire Note 9", as you can see there. There's a long text underneath that, and it says at the start:
"During discussions [then there's an end note 8, which I'm going to come to] it has become increasingly obvious that there are several issues relating to the use of built–up systems and preformed insulation panels that should be addressed as part of this project. It should also be noted that the joint British Standards committee working on the Fire Note 9 test method is

recommending that a part 2 of the standard be developed to address the testing of built–up, preformed insulation (where no masonry wall is present) and curtain wall systems. We currently have no experience of their fire behaviour in this scenario."
Now, according to end note 8, if you go to page 15 {BRE00041887/15}, the discussions that are identified there in that first line of that paragraph are said, if you look at 8, to have taken place at a meeting at DETR on 24 July 2000.
Do you recall that meeting?
A. I don't.
Q. You can't tell us who attended or what was discussed?
A. No.
Q. Do you know whether it was minuted by the BRE?
A. I don't know.
Q. You haven't seen a minute?
A. No, I haven't. I mean, at that time, when the framework management contractors were in place, it would be normal, if they were present, for them to basically take some notes, actions at least.
Q. It may help you, but the meeting of 24 July 2000 is the same day that this document gets signed off. Do you remember having a meeting very, very close ––
A. No. It probably indicates that I was not involved in

that meeting.
Q. Do you know what the issues were relating to the use of built–up systems and preformed insulation panels that should be addressed as part of that project, as it says?
A. No, I don't.
Q. Now, it's right, I think, that the joint British Standards committee which is referred to was working on the conversion of Fire Note 9 into what eventually became BS 8414 part 1 and then part 2.
A. Yes.
Q. Going back, if we can, please, to page 13 {BRE00041887/13}, there are two paragraphs I want to read to you next, the second and the third paragraphs on that page under option 2. The second paragraph says:
"The major change between the existing test method and the second scenario discussed above, is the influence of an internal masonry wall. The existing test facility is designed with this internal wall in place. This is an inappropriate test scenario for the built–up and preformed insulation systems that are installed, in practice, without an internal masonry wall. In order to address this issue the test facility will need to [be] redesigned.
"From the work undertaken in the 1997 PiT project we have some limited knowledge of the behaviour of

proprietary ventilated rainscreen systems and we are aware of some work under a DOE contract 39/3/370 cc 972, but we do not have access to this data so no comment can be made on its suitability for use in this study."

Now, PiT, that's Partners in Technology, isn't it?

A. Yes.

Q. If we go back to page 15 {BRE00041887/15}, if we can, please, we can see end note 11, which is what is signified by the reference to that project. It says there, under end note 11:

"Colwell, S. Smit, D. Andrews, A. Connolly, R., 'Fire Note 3 – Test method to assess the fire performance of external cladding systems'. CR 213/96. BRE 1996. "

That's Fire Note 3, isn't it?

A. Yes, it appears so.

Q. Do you know what specific work undertaken in the 1997 PiT project is being referred to here?

A. No, I don't.

Q. Do you know who carried out that work?

A. The authors as listed would have all been involved in that project, and that would have all been headed up by Tony Morris.

Q. As a result of that project, the 1997 PiT project, what was your knowledge about the behaviour of proprietary

ventilated rainscreen systems?

A. At that time, in 1996, I would have had no knowledge at all.

Q. What about by 2000 and the time of this document?

A. My knowledge in 2000 would have been based upon the work that was being undertaken under this contract.

Q. Right, I see. And what about the evidence given to the select committee the year before?

A. I wasn't involved in that at all.

Q. Do you know in what way the knowledge was limited, as is said?

A. I guess they're referring to the possibility that they hadn't tested any of those types of systems and, therefore, had no knowledge as to how they would perform in this kind of scenario.

Q. I see. Was DOE contract 39/3/370 the contract which led to Fire Note 3?

A. I don't know.

Q. You don't know.

After this report, did you obtain access to the data under that contract to see for yourself what it said?

A. No, I wouldn't have done.

Q. Why is that?

A. I would have expected the project team to have been utilising that if it was available, but I think they've

said in this report that it wasn't available, didn't they, on that previous page?

Q. Going back, please, if we can, to page 13 {BRE00041887/13}, it says at the foot of the page:

"Accepting the budgetary constraints associated with this project, the large–scale experimental programme may be better served by considering a modification to Fire Note 9 to allow built–up systems and preformed insulation panels to be tested. In order to undertake this change in test scenario a new test facility would be required. The construction of such a facility would reduce the budget available for the purchase and supply of full–scale systems but would provide a good basis on which to expand the scope of the existing guidance given BR135 to cover the emerging market trends for which we currently have no data. This data could also be used to support the British Standards activity.

"It is not possible to offer fixed budgetary figures for this option, but should this proposal be considered worthy of further consideration, a costing could be obtained."

Now, given the lack of data on emerging market trends, as we saw from the survey, and given that the data could also support the conversion of Fire Note 9 into a British Standard running in parallel with this

work, as I think you told us, did you yourself recommend to the department that they should proceed with option 2?

A. I don't recall.

Q. You don't recall.

Which was the option that you would have preferred the department to take?

A. I mean, from our perspective, I think it was just important to outline what the options were so that they had the information to make their decision. I mean, it would not –– you know, we were just using the information that we had to say: well, this is what you can do, you can go this route or you can go this route, and it's up to you whether you want to expand the scope along the lines that's being proposed in option 2 or not. I mean, I don't think I would have particularly had a preference, as you suggest.

Q. Was option 2 for the testing programme given consideration or further consideration by the department?

A. I'm sure it would have been given consideration.

Q. Was it ever costed by the BRE?

A. I don't recall.

Q. Now, it's right, I think, isn't it, that the testing programme which was eventually undertaken and then

reported as part of this project was different both from option 1 and from option 2, as set out in the report we've been looking at?
A. I don't recall all the details, but if that's what you're telling me, yes.
Q. Well, we'll look at the details very shortly, but do you remember that fact, that the testing programme eventually undertaken the following year was different from what was proposed?
A. I don't recall it specifically, but ——
Q. Right.
A. —— that could very well be the case.
Q. I'm so sorry, yes.
Do you recall that a total of 14 full—scale tests were carried out, with a third set of tests on composite panel systems included?
A. In broad terms, yes.
Q. Yes.
Do you know how the testing programme that was eventually carried out was decided upon?
A. Well, it would have been a discussion with the project team and the department.
Q. Yes, clearly, but what were the factors that led to the decision to carry out the testing programme in the form in which it was?

A. I don't know the details. I don't know the detailed discussion that took place.
Q. By whom was the decision ultimately taken to carry out the test programme in the form that it was?
A. Well, ultimately it would have been signed off by the department.
Q. Do you know who?
A. No.
Q. Do you know when it happened? By which I mean was the ultimate programme decided before the tests began or did it evolve as the tests happened over the months between May and November 2001?
A. I don't recall.
Q. Let's just look at a document, if we can. Can we go to {BRE00006285}. This is an email from Sarah Colwell to Anthony Burd of 10 August 2001, and you will see that you are copied in on it, as is Peter Field. This is during the course of what became known as the cc1924 testing programme. Just looking at the text —— I'm not going to read it all out to you —— it essentially says that this is a proposal for changes to the testing programme some time after it had begun.
A. Okay.
Q. Do you remember that?
A. Not specifically, but, yes, I can see this.

Q. If we look at the final three paragraphs on page 2 of this email {BRE00006285/2}, if we go to that, I think you can see that Sarah Colwell is proposing changes to the testing programme at this point, August 2001; yes?
A. Yes.
Q. Now, in terms of the suggested options for the full—scale testing, which we'll come back to, the rendered systems, which were set 1, tests 2 and 3, weren't all repeated with fire barriers. Take that from me.
A. Okay.
Q. Do you know why that is?
A. Specifically, no, I don't. It may have been a case of there was a fixed budget that the department had to spend on this work and that, in order to undertake some different types of tests, they needed to, you know, reduce the amount of tests they did elsewhere. But I don't specifically know.
Q. You don't know.
Take it from me also that the ventilated rainscreen system tests in set 2, tests 3 and 4, were also both not repeated with fire barriers. Was that for the same reason, so far as you can ——
A. Yes, again, I don't know specifically.
Q. In fact —— and we'll come back to it in detail

shortly —— it's right, isn't it, that of the full—scale tests undertaken, all 14 of them, only two, one render and one rainscreen system, actually contained fire barriers?
A. That could very well be true.
Q. Is the reason for that financial, to the best of your recollection?
A. Probably. Probably.
Q. Let's then go to the test programme analysis report. This is {BRE00041882}.
If we go to page 1 of that document, it's a client report prepared for Mr A Burd in the ODPM. You can see the date at the bottom: 19 September 2002.
A. Yes.
Q. That's an important date. I'll call this the analysis report, okay? That's 19 September.
If we go to page 2 {BRE00041882/2}, we can see that it was prepared by Sarah Colwell and approved by you, Dr Smith.
A. Correct.
Q. Yes.
If we go to page 5 {BRE00041882/5}, we see the introduction section, and if you look at the second paragraph and the five bullet points under it, it tells us that:

"... 14 full-scale fire tests were undertaken using the Fire Note 9 test methodology, the results from this work are presented in BRE report 209169 revision 1. The systems identified and tested at full-scale were also assessed at intermediate and bench scale using the following test methods ..."

Then you've got the BS 476-6 and 7 tests, and three of the European norm tests, the EN tests. Do you see that?

A. Yes.

Q. Now, before we go through these, the intermediate and bench scale tests, what are those?

A. The single burning item test, the BS EN ISO 11925-2 and the BS 476-6 and 7.

Q. Right.

A. So all of those except for the ISO 9705.

Q. Yes.

Just for clarity, if we turn to page 10 {BRE00041882/10} and table 1, we see a summary of the systems tested at intermediate and bench scale.

Page 10. It refers to 13 systems. Now, there may be a reason for that, and I just want to see if you can help me with it.

If we go to page 23 {BRE00041882/23} and look at table 8, the only difference between tests 3 and 4 under

set 2, "Render Systems", you see those --

A. Yes.

Q. -- is the provision or otherwise of fire barriers; yes?

A. Yes.

Q. Yes. Is it right, fire barriers, of course, can't be incorporated into intermediate and bench scale tests, can they?

A. Correct.

Q. Does that explain why there are only 13 systems in table 1 on page 10, which summarises the intermediate and bench scale results?

A. Yes, that will be the case.

Q. Yes, thank you.

Now, do you remember, when did this testing programme begin?

A. I can't recall that.

Q. We have it at about June 2001, possibly May. Does that ring a bell with you?

A. Yeah, I don't know.

Q. Right.

What was your role in the testing programme?

A. So far as I can recollect, I mean, no role. I wasn't carrying out the tests, if that's what you mean.

Q. Were you supervising Sarah Colwell's work?

A. Insofar as she might want to come and discuss issues

with me, flag things up, but the actual tests would have been carried out by the testing teams in the laboratories that are expert and competent to do so.

Q. Did you supervise any aspect of that?

A. No.

Q. Did you supervise any aspect of the production of the results from the tests or their collation or their analysis?

A. Only insofar as I would have reviewed this when I reviewed the report.

Q. Does that tell us that your only involvement in this was approving this document?

A. That would have predominantly been my involvement, unless we'd have had some, you know, discussions leading up to this.

Q. When you sat down and applied your name as approver to this document, what did you have in front of you, other than the report itself?

A. I don't recall, but -- yeah, I don't recall.

Q. No, not specifically. Let me ask it differently.

Did you have anything else on your desk when you were approving this document other than this document?

A. Yeah, I don't recall. I don't know.

Q. Would it have been your usual practice to examine the underlying test data for each of these 14 tests and

check the conclusions that Sarah Colwell had reached?

A. No, not necessarily. Not to have gone through every single, you know, BS 476 test report, for example.

Q. What did the role of approver, then, of this report involve?

A. Well, because -- and the reason I wouldn't do that is because, in producing a BS 476-7 test report, for example, then that would go through its own approvals process before it was delivered to the end client, even if that's an internal client within BRE. So Sarah would have received approved test reports and, you know, the role -- there would be no need for me to go back and re-approve something that had already gone through an approvals process.

Q. So what did you actually do with this document?

A. I would have reviewed this document as submitted to me.

Q. So you read it and signed it?

A. And query anything, pass comments. I mean, as I said earlier, the whole role of the approver is basically to read the document, to check for spelling mistakes, check for paragraphs, make sure it all reads and makes sense. If anything doesn't make sense or isn't clear, then that might lead to, well, comments being fed back or a discussion, or if any of the conclusions didn't appear to stack up or be supported by the evidence as

presented.
Q. So your review as approver was limited to the four corners of this document?
A. Predominantly it would have been, unless something, you know, had cropped up that had prompted me to go and look at other information.
Q. Do you remember whether there was anything that cropped up that prompted you to go and look at other information?
A. I don't recall that. Not now.
Q. Wasn't your role on this project to quality assure the technical detail of the outputs and the timeliness of the delivery?
A. On this project, yes.
Q. Yes, as director of the centre for reaction to fire.
A. Yes.
Q. I would like to look, then, at the 14 full-scale tests on the assumption, from the evidence you've just given us, that you would have read or did read this document carefully; yes?
A. Yes.
Q. Now, as I say, from the documents we've got, it looks as if the tests were carried out at various times in the months between the end of May/beginning of June 2001 and 14 November 2001, but on occasions more than one test

was carried out within a single day. Does that sound about right to you?
A. It could be, yes.
Q. Right.
Were you actually present at any of the large-scale tests?
A. I don't recall being present, no.
Q. Right. Do you know who were present?
A. Well, clearly the project team would have been, and the technicians that would have been running those tests.
Q. Right.
Sarah Colwell told us -- {Day232/82:20} -- that although she couldn't tell us which tests you attended, you and Brian Martin would have been present at some of or all of the large-scale tests. What do you say about that?
A. I don't recall being present at any of the large-scale tests personally.
Q. Right.
A. And I would have no reason to be particularly. I would have no role to play in conducting those tests. And I think it's also important to point out that, you know, you can't just -- because of the proximity of Cardington to BRE, it was at least a half day to get there and get back, so it would have to be a planned visit. You

couldn't just sort of walk out of your office and pop down to the lab to see a test and return, so -- you know, and given that the project team would have been in attendance, I would have added very little value to the project team at that time.
Q. Well, as director of the centre for reaction to fire at the time, and given that this was a government project for which you had bid, and successfully so, did you not think it appropriate on one or two occasions just to attend at Cardington for the half day, in a supervisory role, just to see what was going on and making sure that everything was working properly?
A. Well, I would have attended if I'd been asked to for a specific problem, but if reassured that everything was on track and going well, then I would have no reason to deviate from that. But, as I say, I do not recall -- I cannot recall whether I saw any of the tests or not, but I don't recall actually going up there and witnessing them.
Q. Does that tell us that your role as supervisor of this project was essentially a reactive one; you would respond to negative reporting but you didn't positively go out and see for yourself what was happening?
A. I mean, we would meet on a reasonably regular basis to review progress, but that would have been in the context

of, you know, are we on track, how are we doing, do we need additional resources to deliver this and so on and so forth.
Q. Now, I'd like to show you a different document of three days before this document, which is the BRE's closing report, dated 16 September 2002. That is at {BRE00041895}. Again, it is prepared for Mr A Burd of the ODPM, and you can see the date there, 16 September 2002, at the bottom of your screen.
If we go to page 9 {BRE00041895/9}, please, we can see a list of the 14 full-scale tests which were carried out, with a description of the main components of the systems in each test.
Do you know why these specific products aren't identified by reference to the product name and manufacturer?
A. I think this relates to the standard practice with pretty much all of the government projects that actually I've ever been involved in. It's always been a requirement to describe the products in a very generic way rather than using specific trade names and manufacturers' descriptions. I think possibly the reasoning behind that is to try to give the most widely applicable scope where possible, and to prevent the industry being able to use the data in the way that we

discussed earlier.
Q. Do you actually know or did the BRE actually know the identity of the specific products and manufacturers, leaving aside the absence of identification in this document?
A. I don't recall, but I'll be very surprised if we didn't.
Q. Well, I ask you that because the Inquiry has asked both the BRE and the department for their records and have been told that there aren't any, and Dr Colwell couldn't help when she was asked about it. But can you confirm that, at the time, that information was known to the BRE?
A. As I say, I would be surprised if it wasn't.
Q. Right.
A. But I can't say definitively one way or the other.
Q. No, of course.
Do you know how and where that information was recorded?
A. From my recollection, I think this project, as we discussed earlier, was —— the systems were procured through an independent third—party contractor, so there would have been specifications generated by him —— or them, sorry.
Q. Indeed. But my question was slightly different: do you know how and where the information was recorded in the

BRE's files?
A. Oh, right. No, I don't for sure.
Q. Right.
Now, we looked earlier at the advice given by the BRE to the department in the survey summary and options report, particularly about the dangers of partnering with industry. Do you know whether, by this time, the department had decided to follow that advice or not?
A. Yes, insofar as this project, I don't think we were partnering with industry. As I say, I think all the procurement was done through an independent third—party contractor.
Q. And who funded the full—scale testing?
A. The government department.
Q. Right.
A. ODPM.
Q. What, all of it?
A. Yes.
Q. So can you confirm that no manufacturers or industry organisations were involved in funding any of these tests?
A. As far as I'm aware.
Q. Right.
Did you yourself have any involvement in the process of purchasing or obtaining any of the products to be

tested?
A. I don't recall, but it's likely that I would have signed off the requisitions because we had a —— you know, limits in terms of how much you could, you know, sign off a requisition for, and indeed some of those may have been above my sign—off limit as well, so they may have then gone up to Peter Field to sign.
Q. Right. Do you remember whether, in requisitioning, you would identify a particular product or just a particular performance standard?
A. It would have related to at least a generic description of the system, and then there would have been a discussion —— because we'd have known —— in order to issue a requisition, you would know how much it was going to cost roughly.
Q. If we go, please, then, to {BRE00006370}. This is an email from Sarah Colwell to you on 15 March 2002, so this looks like it's after the tests, asking you about the drafted text for Mike Payne.
Do you know who Mike Payne was?
A. Yes, Mike Payne was the —— one of the people that were working for AEA Technology at the time, who were the approved —— the appointed third—party contractor that ran the management of the frameworks on behalf of ODPM.
Q. If you look at the text below it, there's a telephone

conversation in the first paragraph. In the second paragraph it says:
"The provision of material for this project lies outside the framework agreement and from the outset we have undertaken to procure and supply the materials for this project on an at cost basis. The initial materials estimate supplied to you was the best estimate available at the time when the project was being developed. As the project has gone on we have continued to procure the materials and services required to complete this project whilst passing all invoices to yourselves directly. To date the invoices received and forward to you total £117,570.25 ex VAT. This covers all materials supplied, installed and tested to date to meet the requirements of this contract. This covers all full—scale tests but only the rainscreen and composite panel systems at small—scale and ISO room."
Is it right, looking at that at least, that it was the BRE who bought the products for the testing but passed the bills back to AET?
A. Yes, it does look like that.
Q. So it would be the BRE who then actually chose the specific products to be tested?
A. Yes, but that would have been agreed, as I say, upfront as in terms of the programme of work to be undertaken.

Q. And do you know who it was who identified the specific project to be acquired?
A. No, I don't.
Q. It says "project" in the question and that is what I said; I meant "product".
A. Yes.
Q. No.
Can you help with what level of oversight and decision-making you had about the components of each full-scale test?
A. Very little.
Q. Sarah Colwell tells us, which is why I ask you, that the procurement of the components of the systems to be tested would have gone through you. That was {Day232/88:1}. Is she right about that?
A. Only insofar as -- in terms of signing them off, the invoices off, as described here, in terms of the procurement. So, as I say, there would have been discussions, I'm sure, with the contractor who was procuring these within the scope of what was set out in the reports to the department, where it had been discussed which systems in generic terms they wanted to test, and then we would have gone to the contractor to provide us with a price for those, which would have then been agreed and signed off, and that's where I would

have signed off to say, yes, we can buy that, and then that would have been sent back to the department. And I hadn't remembered, but the actual external expenditure part of this project then sat outside of the framework agreement. So the framework agreement and the project within that then only covered our staff time in carrying out the works, rather than the purchase of all of the materials.
Q. Did the department have any role to play in the selection of the individual components making up each of the full-scale tests?
A. I don't know to what extent -- I mean, they would have done in a general sense.
Q. What do you mean, in a general sense?
A. Well, when you talk about specific components, I mean, they wouldn't -- and I guess we didn't either -- have a particular role in saying that you need to use these batons and fixed at these centres and so on and so forth, but in terms of the make-up, in terms of the insulation and the render system or the rainscreen system or whatever, then they would have seen that and would have agreed to that.
Q. Do you know who designed the test rigs for each of these 14 tests?
A. The systems to actually go on to the rig --

Q. Yes.
A. -- in terms of securing it on to the rig? It would have been the contractor.
Q. The contractor being?
A. The third party that procured the materials. It was one and the same --
Q. Just help me then. Is this AET?
A. No.
Q. So who was the contractor?
A. No. So we appointed an independent third-party contractor to undertake the procurement and the installation of the systems on to the rig.
AEA Technology were the contractor used by ODPM and appointed by ODPM as their -- I think they were called their research management contractor, and they acted as the interface, the people that basically agreed and accepted reports, let the contracts. They had a portal, a database, where all of the reports and so on had to be delivered through. So they dealt with the day-to-day running of the project from the department's end.
Q. Who was your contractor?
A. Our external contractor?
Q. Who built the rigs -- who designed the rigs.
A. I don't know.
Q. Right.

A. I'm sure there must be something in the -- well, I would have thought there would be something in the documents we provided to you.
Q. Now, the full-scale tests were designed and carried out according to the methodology in Fire Note 9, as we understand it; is that right?
A. That's my understanding.
Q. Can we go to {BRE00041882/23}, please. This is the 19 September report, the analysis report, and here we see a table at page 23, "Summary of full-scale test results", table 8. If you look at the table, it contains the 14 tested systems listed and the results are in the far right-hand column; yes?
A. Yes.
Q. "Fire Note 9 Pass/Fail."
A. Yes.
Q. You can see from that final column that 3 of the 14 tests resulted in a pass.
A. Yes.
Q. Do you see that?
A. Yes.
Q. They are render tests 4 and 5 and composite panels test 4; yes?
A. Yes.
Q. And all the others failed?

A. Yes.
Q. So two of the systems which passed were in set 2, as initially proposed, render systems; yes?
A. Yes.
Q. And only one pass from set 3, the composite panels?
A. Yes.
Q. And no passes in set 1, the rainscreen panels. They all failed, didn't they?
A. Yes.
Q. I want to ask you briefly about something in the documents.
Keeping page 23 up on the screen if we can, I wonder if you can help us with this, can we please have up {BRE00041912}. This is going to have to be in the native and may take a little time to pull up. It's an Excel spreadsheet which shows the same or more or less the same data as in table 8. If we open it, and keep it on the left-hand side, I think that will do.
It's right, I think, can you help us, this is an Excel spreadsheet showing the same data as in table 8 on the right-hand side of your screen?
A. It appears so.
Q. It appears so.
A. I can only see two columns but --
Q. Yes.

A. I can't see the product descriptions.
Q. No, and that's sheet 8, but let's go -- if you look at table 8, you can see there are two render passes, but in the spreadsheet, on the left, you can see that there are three. Do you see that? Three passes on the render spreadsheet.
A. That's the group at the top, I presume?
Q. Yes.
A. So I'm assuming that's the group at the top?
Q. Yes.
A. Yes, it's in a different order to --
Q. It is.
Let's look at row 6, which is identified as a pass; yes? Now, that's a test on a render system which incorporates phenolic. We can see that that same test is recorded in the table on the right-hand of your screen, as you see, as a fail. Do you see that?
A. That's line 1, is it, on the --
Q. It's row 6.
A. But in table 8 it's row 1, is it?
Q. In table 8 --
A. Yes.
Q. -- it is, yes.
A. Specimen 1 under "Render Systems".
Q. Yes, "Phenolic insulation with acrylic render coat no

fire barriers".
A. Yes.
Q. Can you explain the discrepancy?
A. No. Not sat here right now.
Q. Are you able to confirm that the particular test, render with phenolic, was in fact a fail?
A. I would presume so.
Q. Yes, and why would you presume so?
A. Because that's the way it's been reported.
Q. Right. Did somebody therefore look at the spreadsheet and correct the result, so that what went to government in the analysis report can be taken as the correct version?
A. I would have expected so, yes, but I don't recall.
Q. Thank you.
Now, let's go back, then, to the closing reports at {BRE00041895/9}. You can take both of those documents off the screen and go back to that document, please, {BRE00041895/9}.
Here we have the initial experimental programme under table 1. You can see under the heading "Rainscreen System" -- do you see that?
A. Yes.
Q. Which is set 2, you've got item 5, aluminium sheets; yes?

A. Yes.
Q. Do you know the name of the aluminium sheet product?
A. No, I don't.
Q. Or the manufacturer? Presumably not.
A. No.
Q. Is it the case that these panels were in fact aluminium panels with a polyethylene core?
A. I believe they were from the earlier document that you presented.
Q. Yes. Indeed, they were one of the types of panels referred to in the literature review we've looked at taken from the Architect's Journal.
A. Yes.
Q. Good.
So let's go to the analysis report of three days later, then, {BRE00041882/10}. Let's trace this through. If we go to that document -- this is only three days later, as I say -- and go to page 10 and table 1 in that, and look down at the systems there.
Table 1, item 5, under the heading "Rainscreen", you can see a bit more detail, and it says:
"Aluminium/polyethylene core sheets ..."
Yes?
A. Yes.
Q. And then tracing it through to {BRE00041909}, we find

a blank tabulated summary for all the testing results, and in the final row, under the heading "Rainscreen", you see the description:

"Aluminium/polyethylene core sheets on aluminium railing."

Now, Dr Colwell said that that product was ACM with a polyethylene core, and I think you would agree with that?

A. Yes.

Q. That was {Day232/90:21} and {Day232/91:19}.

Do you remember being present at that test, the test which incorporated aluminium polyethylene core sheets on an aluminium railing?

A. No, I don't.

Q. Now, the date of that test, according to the Inquiry's records, was 18 July 2001. Does that trigger a recollection?

A. No. No, it doesn't.

Q. Now, this test was notable in terms of its fire performance and, in particular, the early manual termination before six minutes was up. Do you recall that?

A. No.

Q. Did you not hear about that from others?

A. I'm sure I would have heard about all of the tests in

summary during various discussions, you know, in broad terms. But ——

Q. Can we go to —— so sorry.

A. No, go on, sorry.

Q. Right. Can we go to {BRE00041912}, please.

I'm so sorry, this will take a bit of time. It's easier and quicker to go back to table 8 in the 19 September analysis report, if we can do that, which is at BRE000 —— well, we're here now, all right. Leave it as it is.

If you open that up at row 15, column R, you can see the termination time of 5.75 minutes; yes?

A. Yes.

Q. So that was one which was terminated very early on.

A. Yes.

Q. If you look to the left of that, you can see some other results: time to external under column L, three minutes, and the maximum temperature is also recorded.

A. Yes.

Q. Those were strikingly poor, weren't they?

A. The times are, yes.

Q. Yes.

We'll come back to that in a moment, but just some further questions about the selection of these products.

Do you know why a ACM polyethylene—cored product was

chosen as one of the products to be tested in this programme?

A. I don't recall, but looking back at the earlier report that we looked at earlier this morning, in terms of the survey responses, et cetera, my guess is that it followed through the planning and the programme from there.

Q. Right. Does that tell us that, however good or bad the survey was in relation to its reliability as a data set, you knew enough to include ACM panels with a polyethylene core in your full—scale tests?

A. Yes, because this is a research project, so you're looking to basically include a range of different products and materials to basically —— well, test their performance, because a lot of these, as we also spoke about, we had no knowledge of how they would perform in these types of scenarios, and that was particularly true of the composite and rainscreen systems, and therefore you want to sort of include a range of systems that you can obtain data on, so that you can then look at how the test is performing against these types of products and it gives a basis upon which to benchmark performance and whether they're adequate or not. You know, if the tests gave passes for everything, you would take the view, well, the test isn't severe enough.

Q. Right.

Do you know who decided on the inclusion of ACM panels with a polyethylene core in this test programme?

A. No, I don't.

Q. Can we take it that the reason or one of the reasons it was included in this test programme is that ACM panels with a polyethylene core was in common use or at least common enough use to warrant inclusion?

A. I don't know whether we would have had that information, other than it had been flagged up, I think, in the literature —— the building survey, sorry, not the literature review. Well, that was included in the ——

Q. And based on the Architect's Journal's costings?

A. Yes, yes, and obviously there was a vast number of different products that came out of the Architect's Journal details, and obviously all of those products could not be tested anyway, so it was a case of selecting a few. But I don't know who actually made that ——

Q. Was ACM with a polyethylene core, or indeed ACM with different kinds of core, a cladding product that you had come across before?

A. No.

Q. Can we take it from that that you had no knowledge one way or the other of its particular reaction to fire

performance?
A. Correct.
Q. Now, you said you don't recall being present at the test. I'd just like to go back, please, if we can, to —— we can probably use this document, but it may be better to use the report that was actually sent to government.
Can we go, please, to the analysis report of 19 September at {BRE00041882/23}, which is the results table at table 8.
Now, if you go, please, to row 5, under the heading "Rainscreen System", that shows, as I've shown you already, that that failed at 5.75 minutes. That's a strikingly rapid time to failure, isn't it?
A. Yes.
Q. Do you remember what the reaction was by the BRE at the time to that result?
A. I don't recall, no ——
Q. Do you remember ——
A. —— at the time.
Q. —— what you were told by those who witnessed this test?
A. Probably that it was a rapid failure and they would have presumably had the same view about the render system that failed and also the composite panel system that failed.

Q. We can see the other results on the screen: time to external failure, 3 minutes, and to internal failure, 4.34 minutes.
A. Yes.
Q. Do you know why the test was terminated at 5.75 minutes?
A. No.
Q. Did nobody tell you that it was terminated because it would have been dangerous to continue?
A. I mean, that's —— no, I don't know. No.
Q. Did anybody tell you that they were shocked by what they had seen and shocked by the results?
A. I don't recall that, no.
Q. That was Sarah Colwell's reaction, as she told us in her evidence on {Day232/96:16}. Do you not recall her reporting to you that this particular test had had a shocking outcome and had been terminated early?
A. I don't recall it in those terms, no.
Q. You don't?
A. But, you know, you can clearly see that it has failed, so ...
Q. Well, there are failures and there are failures, aren't there?
A. Yes, yeah, but it's part of the research, then, to make sure that the lines and the criteria that then follow in terms of the classification are such that these types of

products can never pass the test. Whatever you do to them, they can never pass this test.
Q. But, as you say, this was a research product and this was a product you had never come across before. When you saw the results or heard about the test, did it not strike you, did it not stick in your mind, that this, of all the products tested, had a particularly noteworthy result?
A. Yes. I mean, I would have noted that it had failed and it had failed early. Yes.
Q. Now, this was a class 0 product, wasn't it?
A. Yes, I guess it was. Yes.
Q. It was, and we have that elsewhere in this document.
A. Yes.
Q. For our records, it's at page 11 {BRE00041882/11}.
Let's go to {BRE00041911/3}, please, "Rainscreen 3 — Aluminium + Isowool on metal", and you've got the detailed observations from the PE—cored aluminium rainscreen cladding test. They're there, starting at time 0:00, "Ignition of crib", and ending at 7 minutes, "Front and wing faces extinguished". You can see at 5 minutes, "Flame approximately twice height of rig (20m)."
Do you remember seeing these results at the time?
A. I don't recall it, no.

Q. Do you know who recorded these observations?
A. No, I don't.
Q. Looking up, it says at 3 minutes and 5 seconds, "Molten aluminium drops off front face". Do you remember reading that particular observation?
A. I don't recall it, no, and the person that would have recorded the observations would have been part of the project team undertaking the test.
Q. When you learnt about this result, did you yourself consider that this was a significant form of behaviour for a panel because of the potential for downward fire spread, the fire following the molten dripping polyethylene?
A. Yes, and, you know, as I said earlier, I mean, the whole point of this research project was to get to the point where we could ensure that products that performed badly would never ever be able to pass the test.
Q. Looking at the results I've shown you and the chronology that I've shown you here, particularly, at 5 minutes, the flames being approximately twice the height of the rig at 20 metres, did you conclude at the time that this was a catastrophic escalation?
A. Well, yes, clearly it was not performing well in the test scenario that we were using, Fire Note 9, yes.
Q. That's something of an understatement, isn't it?

A. Mm.
Q. I mean, it's an outlier, if you look at the other failures, to a very considerable degree.
A. Sorry, you want me to ...?
Q. Do you agree with me that what you've just told us is something of an understatement, "not performing well"? It's an outlier, if you look at the other failures, to a very considerable degree, Dr Smith.
A. Well, there were only three products that actually failed -- passed, sorry. So an outlier? Yes, it was very rapid in terms of its behaviour, but, as I say, it just -- it was part of the project to ensure that these products could never ever be used.
Q. Yes, and on that answer, does that --
A. So -- sorry, go on.
Q. Let me lead up to it.
Do you remember there being a sense of alarm at the BRE in the wake of this test about this product which would lead to the conclusion you've just given us, that they should never ever be used?
A. I don't regard it as a sense of alarm. I mean, our role, of course, is to present the data and the results and the technical evidence. I mean, you know, you don't sort of react in quite the way that you're suggesting, I don't think.

Q. Well, others did at the BRE, Sarah Colwell told us. She was shocked.
A. Well, okay, that wasn't conveyed to me. I mean, I would have looked at this report, I would have looked at the facts and I would have looked at the way the facts were reported and would have ensured that what was reported was, you know, factually correct and supported.
Q. Mm.
Did you report to the department not just the facts, the scientific objective data, but the human reaction that your scientists conducting these tests had had?
A. I would not have had that discussion with the department necessarily. I mean, that would have been had through the project team. I mean Sarah and/or Brian Martin would have had those discussions.
Q. You say they would have; do you know whether they did?
A. I don't know definitively, no, but I'll be very surprised if they didn't, especially if they were there and witnessed it.
Q. Wasn't it important to you, as the scientist, to drive home to the department, to Anthony Burd, not just the data on a page, but what it might signify in human terms, so that he, in government, could really understand the effect on real human lives in real buildings?

A. I don't think there was ever any doubt in my mind that that was fully conveyed and that the department sort of didn't understand. I think the department were very aware.
Q. They were very aware. Now, were they aware --
A. On the basis of, you know, the research outcomes.
Q. Now, you've told us in your evidence just a few moments ago that this test told you that this product should never ever be used on a tall building.
A. Correct.
Q. And that was your conclusion and the BRE's conclusion, was it, from that test result?
A. Yes.
Q. Do you remember yourself or anybody at the BRE conveying that information in those terms or in like terms to government?
A. In a broad sense, yes, that would have been conveyed, in the sense that, you know, in the discussions about where the criteria would sit and were adopted therefore in BR 135, those parameters are set to ensure that materials and systems of this type, and indeed some of the others that also didn't perform well, would not be acceptable within the context of the large-scale test method.
Q. Did anybody at the BRE or in government consider

alerting industry or local authorities or building control or the NHBC or building owners to this result and its obvious danger to life?
A. I don't know.
Q. You don't know?
A. No, I don't.
Q. Can I take it that the BRE didn't?
A. No, we would not have done. It would have been -- I mean, we would convey the results and the data, et cetera, to the department, and then they would decide what to do with those data and results and whether to discuss it in a wider sense. So that's the way that that would be handled and did work.
Q. I see.
Can we be just clear about one thing then: your evidence to the Inquiry, is it, is that from the middle of September 2002, to the best of your recollection, the government was in no doubt at all that ACM panels with a PE core should never ever be used above 18 metres?
A. Well, I can't say whether they took that all on board or not. I mean, you'll have to ask the department themselves as to what they actually -- what their views were. I can't speak on behalf of what individuals' views were.
Q. No, I'm asking you to speak on your own behalf and on

behalf of the BRE.

My question —— I'll put it again: is it your evidence that from the middle of September 2002, to the best of your recollection, as you saw it, the government was in no doubt at all that ACM panels with a polyethylene core should never ever be used above 18 metres?

A. Well, as I say, the bit that I can't accept is that the government had taken the view that they should not be used. I mean, I don't know that. All I can say and as far as I can go is that the results were reported within the context of the outputs from this project, and it was very clear what the results of those tests were, including ACM, but there were some other systems as well, and that information was there. And there had been, to my knowledge, discussions around those results and what they meant and how to set the criteria, therefore, in BR 135 going forwards.

SIR MARTIN MOORE—BICK: Can I ask you this: do you know if any steps were taken to draw the government's attention to this particular result or was it simply left for it to find out for itself by reading the details of the report?

A. Well, all the way through these projects, I mean, there would be meetings, progress report meetings, with, you

know, departmental representatives, and, you know, you would have some fairly detailed presentations and feedback during those, which go beyond what was actually reported in the reports. So, you know, I have a high degree of expectation that that would have all been discussed during the progress of the project, basically.

SIR MARTIN MOORE—BICK: Thank you.

MR MILLETT: Let me just try this a slightly different way.

Casting your mind back to September 2002, as best you recall it, were you in any doubt in your mind that the government understood, so far as you knew, that ACM panels with a polyethylene core should never ever be used above 18 metres?

A. Well ——

Q. You can't speak for them, but you can speak for you.

A. No, I can speak for myself, and I would say within the context of the work being undertaken in relation to Fire Note 9 at the time.

Q. And the answer is yes?

A. Within that context, of Fire Note 9, yes. So the extent to which they were prepared to accept Fire Note 9 as being representative.

Q. Did this test performance of what was or what was said, I think, to be, at least, a class 0 product make you think about whether class 0 was an appropriate

classification for the surface material or a product above 18 metres?

A. I don't recall thinking about that specifically at the time. I mean, that wasn't the primary objective of this project, so I don't recall thinking about that at the time. I can't recall.

Q. Did it occur to you that the fact that a product achieved class 0, such as this product, was no guide at all to whether it would meet the functional requirement B4(1)?

A. The —— whether it was a class 0 or not, class 0? Yes, I mean, insofar as —— I think the whole purpose of doing this project and doing the development work on Fire Note 9 was for that very reason, to look at the performance of the system as a whole rather than looking at the performance of the individual elements within the system, which, you know, Ray Connolly's work had previously shown was not a reliable means for looking at the whole make—up of the external system.

Q. Well, quite so, and that's why I asked the question. If nothing else, this test result would have told you —— is this right? —— that class 0 had now been empirically proved to be an utterly unreliable guide, at least in respect of this class 0 product, to whether it would meet the functional requirement B4(1)?

A. If used in absolute isolation, yes.

Q. If used in absolute isolation.

A. If you just relied on that test alone.

Q. Which of course, at the time, was the linear route to compliance with ADB, wasn't it?

A. Yeah, I can't recollect off the top of my head, but probably, yes.

MR MILLETT: Mr Chairman, is that a convenient moment?

SIR MARTIN MOORE—BICK: Yes, I think it is. Thank you very much.

Well, it's time we stopped for lunch, Dr Smith. We'll break off there. We'll resume, please, at 2 o'clock, and, as before, please don't talk to anyone about your evidence while you are away from the room. Thank you very much.

THE WITNESS: Thank you.

(Pause)

SIR MARTIN MOORE—BICK: Thank you, Mr Millett. 2 o'clock, please.

(1.02 pm)

(The short adjournment)

(2.01 pm)

SIR MARTIN MOORE—BICK: All right, Dr Smith?

THE WITNESS: Yes, thank you.

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

Yes, Mr Millett, when you're ready.
MR MILLETT: Yes, Mr Chairman, thank you.
Dr Smith, I would like now to go back, please, to {BRE00041882/23}, which we were looking at before, page 23, table 8, under the heading "Render Systems". You can see under that section of this table that there are five tests, and there are references there to phenolic insulation and polyethylene insulation at items 1 and 2 respectively; yes?
A. Yes.
Q. Do you know what the name of the polyethylene insulation product was?
A. No.
Q. Nor the manufacturer?
A. No.
Q. Does the same apply to the phenolic insulation product and its manufacturer?
A. Yes, it does.
Q. Looking further down the table, under the heading "Composite Panel Systems", there are references to polyisocyanurate–cored panels and polyurethane–cored panels at items 1 and 2. Do you know the name of the polyisocyanurate–cored panel and manufacturer?
A. No, I don't, sorry.
Q. Do you know why only the core of these panels is

described in this table?
A. What, you mean as opposed to ...?
Q. As opposed to the other products.
A. Okay, so the fact it doesn't say steel–faced or whatever?
Q. That's actually right, that's the point. Yes.
A. Yes.
Q. Yes. Do you know why it doesn't say so in the data? Do you know why the PIR and PUR–cored panels don't say they had steel facings?
A. No, I don't, although for those type of composite panel systems, it was probably taken as read that they were all steel–faced.
Q. Why would that be?
A. Because that's what they were that were available in the market, to my understanding anyway.
Q. Right. So you hadn't heard of aluminium foiled insulation?
A. Not in terms of composite panel systems that are used on, you know, the outside of buildings.
Q. I see. This is under the render systems as opposed to rainscreen?
A. Under the composite panel systems, sorry, I thought that's the section we were talking about.
Q. Yes, under that system, yes, so composite panel systems,

your experience was that the panels were always steel?
A. Yes.
Q. I see.
Now, neither of those panels achieved class 0 in the testing, did they?
A. Which ones? The line 1 and 2?
Q. The PIR and PUR–cored panels under composite.
A. I don't know.
Q. If we stay with the tests on page 23, you can see that both the test on the PIR–cored composite panel and the PUR–cored panel failed the full–scale test because of flame penetration. You can see that ––
A. Yes, I can.
Q. Yes, in the column. Did that concern you at the time?
A. Well, it was a –– I don't know whether it would have concerned me particularly other than it was additional data that we were collecting as part of this project ––
Q. Right.
A. –– to guide the development of BR 135.
Q. What did those results tell you about the polyisocyanurate and the polyurethane–cored products?
A. Well, it basically gives you the reason that they failed.
Q. Did it surprise you, looking up the table at the rainscreen system results, that none of the rainscreen

systems tested passed under the full–scale test under what was then Fire Note 9?
A. Yes, that's evident from the results as presented.
Q. It is.
A. Yes.
Q. What I'm really seeking to understand is your reaction to it, if you had one? Were you surprised by that?
A. Not necessarily, as I say, because this was all about setting pass and failure criteria for, you know, the large–scale test.
Q. Indeed, but did you have a reaction? Did you have a thought about what that might mean as opposed to simply seeing visually the word "fail" on the page?
A. Well, I mean, from BRE's perspective and my own perspective, I mean, we wouldn't then be looking to say, "Well, we can't fail everything, therefore we're going to change the criteria", if that's what you're suggesting.
Q. Oh, no, not at all. I was actually really just seeing if you could tell me rather the opposite, whether you drew any conclusions about the fire safety of common products.
A. Probably not at this particular stage.
Q. No.
Is it the case that you yourself simply drew no

conclusions of your own about the fire safety of common products?
A. Well, I mean, the data that's collected here is clearly showing sort of a range of performances, and it's also showing, you know, the sensitivity of systems to factors such as fire barriers as well, I mean, because none of these had fire barriers in them. So it's possible that, if they were tested again with fire barriers in the relevant positions, then you may well have got -- well, you would have got, presumably, an improved performance for some of the systems. But, you know, this was seen as a data-gathering exercise to inform the development of, well, the test method and then the BR 135 document and the classification criteria.
Q. Let me ask you about fire barriers.
We've touched on the fact that only two of the 14 systems tested included fire barriers.
A. Mm-hm.
Q. We saw from the bid document that one of the stated objectives of this contract was to understand the contribution of any firestopping present within cladding systems; you remember that? Yes?
A. Yes, in the initial proposal, yes.
Q. Did it change?
A. It's possible that it changed during the discussions

because, obviously, as we also identified this morning, the scope of the systems tested was increased.
Q. Did it increase so as to remove the understanding of contribution of firestopping?
A. It probably evolved such that it was seen that those tested without fire barriers would give a worst-case type performance, and it was probably, based on the discussions that would have been had at the time, decided that it would be more beneficial to test a broader range of systems, rather than doing half the number of systems with and without fire barriers.
Q. Oh, I see.
Did you yourself ever investigate internally within the BRE why it was that, despite the fact that the bid document stated in terms that one of the objectives of the contract was to understand the contribution of any firestopping present in the cladding system, in fact only two of the 14 tests in the end had firestopping or cavity barriers in them?
A. I don't recall at the time but, I mean, obviously to deviate from the proposal would only be done with the agreement of the department. So it would have changed on the basis of discussion and direction from the department.
Q. No, I understand that. But my question is: did you ever

find out the reason for --
A. I don't recall.
Q. No.
Let's go back to the analysis report, please, at {BRE00041882/3}. This is the 19 September 2002 report submitted to Anthony Burd. Page 3, paragraph 7, at the bottom of the page, it says:
"The full-scale test was the only method which satisfactorily assessed the system performance, including detailing such as fire barriers."
Now, that's one of the conclusions of the BRE from this project, isn't it?
A. Yes.
Q. Do you know how the full-scale test method satisfactorily assessed detailing such as fire barriers when only two of the full-scale tests actually contained any fire barriers?
A. Well, yes, as we discussed earlier, I mean, it's the only methodology that you can incorporate that detail into anyway. You cannot include fire barriers in any of the bench scale or intermediate scale tests.
Q. That's true, but I don't think that quite grasps the essence of my question.
My question is really about how the full-scale test method, on the basis that it did test the efficacy of

particular fire barriers, did so when only two of the full-scale tests actually contained cavity barriers.
A. Well, obviously there was data there for those two scenarios with fire barriers in them.
SIR MARTIN MOORE-BICK: I think Mr Millett's point is that if you only do two tests with fire barriers, it's not a very large body of data to determine whether the fire barriers really did much good.
A. Yes, I accept that point in relation to this test, but there was a -- there was also all of the other work that had been done leading up to this large-scale test.
MR MILLETT: Is the conclusion at 7 no more than in fact what you've just told me, which is that it's a statement of fact that bench and intermediate scale tests cannot, by their nature, assess the performance of cavity barriers in a full system because they're not full-scale tests? It's saying no more than that, I think.
A. That could very well be the case, yes.
Q. Right. So they're not actually tests capable of assessing the performance of cavity barriers per se?
A. Well, of course they do as part of a system.
Q. Well, that's the point.
A. Yes.
Q. If they're going to as part of a system, then don't you need rather more than just two out of 14 to be able to

form a view?
A. Well, it depends what conclusions you're then going to draw, I guess, from that test, but if you want to have a generic solution, then you would need a lot more tests. But if you're talking about a specific type of fire barrier, and I think in this one they used an intumescent—type metal grid that intumesces under the influence of heat, so the results for those tests would only be applicable to those particular fire barriers, and I don't think it's really saying very much more than that.
Q. Well, why not run each test in each series with and then without fire barriers in order to form a conclusion?
A. Well, yes, in an ideal world, that's what we would like to do.
Q. Why didn't you do it?
A. Because you can only do what the budget will enable you to do, and, you know, you're constrained by a fixed allocation of money, and then it's a question of detailing the experimental programme within the boundaries that you have available to you financially.
If we were to repeat all 14 tests with and without barriers, the project would have cost double the money, and at the time, the department wouldn't have had the budget, I'm guessing, to have done that, which is why

the discussions took place with the project team and so on to vary the project and the scope of it and the scope of the materials, et cetera, during the course of the project.
Q. Didn't Approved Document B at the time of this test require cavity barriers in the external wall?
A. Yes. It still does now, I believe.
Q. Indeed, but at the time it did. Therefore, why were you testing full—scale systems which, by the absence of cavity barriers, would not have complied?
A. Well, my view is that this was looking at basically the make—up of the external wall in a worst—case scenario, and given the information that we've already discussed as well, where some people were getting these details wrong or not including them, which is obviously a matter for enforcement, not a matter for the regulations as such, then it was looking at the worst case.
Q. But weren't you interested in seeing how ACM with a polyethylene core panel performed where cavity barriers were present?
A. I don't recall what the discussions were around that at the time.
Q. No, but weren't you interested in knowing ——
A. In an ideal world, you would be interested in looking at lots of different variations, but, you know, that's

sometimes just not feasible.
Q. Does it come to this: you had 14 tests, of which only two had cavity barriers, because you wanted to test a wide range of products, but, in doing so, tested 12 out of 14 in full—scale tests that would never have complied with Approved Document B because of the absence of fire barriers?
A. Yes, but if you're setting then the criteria based on those tests, you've got an in—built margin of safety, in the sense that a system that does comply and does have cavity barriers, you would expect to perform better.
Q. Ah, but unless you've done a test, Dr Smith ——
A. But there is a body of evidence that led up to that.
Q. You had no empirical evidence to form any conclusion that if you tested ACM with a PE core, it would perform better in a system with cavity barriers than without.
A. Not with that specific case, but there was generic —— an emerging body of evidence from other systems tested that that was indeed the case.
Q. Now, I think you have told us, and you say so in your statement, paragraph 24 at page 8 {BRE00005624/8} —— I don't think we need to go back to it, we saw it, I think, last week —— that there had been a clear recognition that it wasn't possible to rely on small—scale fire tests producing data on individual

elements as a means to try to predict and control fire performance. That's in your statement.
My question, on the back of that, is: did you consider at the time that the test programme as carried out, with only two of the 14 full systems containing cavity barriers, was capable of informing questions regarding the influence of cavity barriers?
A. Well, within the context that we've just discussed.
Q. So yes ——
A. Yes.
Q. —— I think is the answer to my question.
A. Yes.
Q. And what questions about cavity barriers did this testing programme in the end inform? What did it answer? What did it tell you?
A. That basically by installing cavity barriers in a correct way, then they can improve the performance.
Q. In two cases out of 14?
A. Yes.
Q. Let's move on to some questions about intermediate and bench scale tests.
Did you carry out or witness any of those tests?
A. Not to my recollection, no.
Q. Let's look at this document, the analysis report, please, page 11 {BRE00041882/11}, where we have the

results under the heading, "BS 476 parts 6 and 7", and that's divided up into "Rainscreen Panels", "Render Systems" and "Composite Panels".

If you look at the overall heading, it says this:

"The results from BS 476 parts 6 and 7 are presented in Table 2. The results from these tests were not as expected, with only four of the eleven products achieving Class 0. All the materials tested were believed to be Class 0 products when purchased for this project."

Now, we've established, because you've told us, that it was the BRE who purchased the products from the market, invoicing the department through AEAT afterwards; yes?

A. Yes, we used a third-party contractor to do that on our behalf. So BRE didn't go out and purchase the products because, I mean, there's a danger, if you like, in doing that, because people think: well, why do BRE want some of our products?

Q. It was done through AEAT as the middleman?

A. No, no, no, through another third-party contractor who I -- you asked me who it was this morning and I couldn't remember, I didn't know, but that -- so it's a different contractor. It's a cladding-type contractor who is familiar with designing cladding systems, et cetera, and

that's not AEA Technology.

Q. Was that Fox Designs?

A. It might be. I can't be sure.

Q. Right.

What was the basis, just going back to the words on the page there, for BRE's belief that all of these products were class 0?

A. It's something we would have asked them to go out and do, to buy.

Q. Right. But it says "were believed to be Class 0".

A. Yes.

Q. Believed by the BRE?

A. Yes.

Q. On the basis of what?

A. In the sense that the contractor would have sought and asked for class 0 products and would have been told that they were class 0 products.

Q. Right. Do you know whether the contractor saw any independent verification or certification of the class 0 status of those products?

A. I don't know.

Q. Right. Do you know whether the belief was based simply on the say-so of the manufacturers or some other objective data?

A. Yes, I don't know, no.

Q. Was your expectation, looking at that second sentence, that those products would achieve class 0 when tested under BS 476-6 and 7 by the BRE?

A. Yes.

Q. If we look at table 2 on page 12 {BRE00041882/12}, the next page, please, we can see the data which reflects those results in the last column on the right, "Class 0".

A. Yes.

Q. Then there is a series of Ns and Ys, nos and yeses; do you see that?

A. Yes.

Q. Y is those which did achieve class 0 by testing, and N for those which did not.

Now, if you look at the aluminium sheet, item 3 --

A. Yes.

Q. -- you can see it gets a Y, in other words yes, class 0.

A. Yes.

Q. So that was one of those four panels that did achieve class 0.

A. Yes.

Q. Now, apart from being unexpected, what did those class 0 test results tell you?

A. Well, that it appears that the market claims of some manufactured products were not as they ought to be.

Q. Yes.

Now, I'd like to understand your thought processes when seeing this data.

Did you think, as one obvious possibility, that seven out of 11 companies were misrepresenting their product classifications?

A. Potentially, that was a possibility, yes.

Q. Up to seven?

A. Yes.

Q. It did occur to you, did it?

A. Yes.

Q. Really? Did it occur to you because you were cynical or sceptical about the familiarity of some of these manufacturers with the truth?

A. No, it was just the technical evidence, as it was presented.

Q. The technical evidence as presented is that a class 0 product as told to your contractor, or perhaps as even certified by a certifying body, was not class 0 when tested, even though it was presented as class 0.

A. Yeah, I doubt any of these products would have been certificated or claimed to have been.

Q. Right.

You said that one of the things that occurred to you was because manufacturers might misstate the

classification ; yes? What I'm interested in is why they would do that, to your knowledge?
A. Why they would ...?
Q. Were you familiar, as an experience of your own at the time, that manufacturers would play fast and loose with the truth about whether or not their product ——
A. No.
Q. Right. But nonetheless it was something that occurred to you, as you told us?
A. Yes, it was something that needed further consideration.
Q. Another possibility, did this occur to you, was that there were very serious reproducibility issues with testing to BS 476—6 and 7?
A. No, I don't believe that was a consideration.
Q. You didn't?
A. No.
Q. Well, if that's not the case —— in other words, if you tested a product to class 0, it will always achieve class 0 —— what other conclusion could you have drawn at the time, other than that these manufacturers were lying to your agent?
A. Well, that's what I said. It was something that needed further investigation.
Q. Right.
A. Or consideration, at least.

Q. Yes.
Were you struck by the fact that a majority of suppliers of allegedly class 0 products for your testing had misrepresented the classification in that way?
A. Well, yes, in the sense that it was a surprise to us.
Q. Did you think of taking that up with anybody in government? This is obviously in the report, but did you actually ——
A. Yes, I mean, it was a matter that was in the report and it was a matter that was raised. I mean, the kind of response to that was and has been for a long time, and has carried on in more recent times as well, that ultimately the claims that a manufacturer makes in the market are their responsibility, and, you know, they have to be able to justify those claims.
Q. Did you think of raising this matter with Trading Standards?
A. No, we wouldn't have done that directly. I mean, it's very possible that the government department would have done that.
Q. Did you raise with Anthony Burd the possibility of his raising it with Trading Standards?
A. I'm sure there was some kind of discussion around that, because I think also, at the same time, the Radar projects were going on around this sort of time as well,

and I think there was also some results similar to this in the RADAR project that Warrington were undertaking.
Q. That was in fact in the May of 2000. You're right about the results and we'll come back to that in due course.
A. Yes.
Q. Let's go to page 19 {BRE00041882/19} and look at that, please, under the heading "Class 0". It says:
"The results from the BS 476 part 6 and 7 tests were expected to confirm the Class 0 performance of the products used in this project. As the results show, all the materials achieved the required performance levels in the Fire Propagation test, BS 476 part 6, but a significant number did not achieve the required Surface Spread of Flame classifications. There does not appear to be any one reason for this lack of performance."
In other words, no one particular reason for the failure to satisfy BS 476—7 had been identified, I think that's what it's telling us; correct?
A. Yes, yes, correct.
Q. What was on the list of reasons from which no one factor could be picked out as the cause, do you know?
A. No, I don't. I don't.
Q. Do you know what possibilities had been thought through as to why it was that they routinely failed?

A. I mean, I guess people would have considered things such as the surface coatings, the colours of the coatings, thickness of coatings and finishes.
Q. Do you remember what your reaction to these results was when you first learnt of them?
A. Yes, surprise.
Q. Right. Do you remember whether anybody else in the BRE was surprised?
A. Yes, I would imagine the project team was surprised. It would have been them that would have brought it to my attention.
Q. Do you remember what Anthony Burd's reaction within the department was, or anybody else within the department?
A. I don't recall, but, as I say, I do know there was an ongoing kind of discussion around this based on the earlier RADAR results as well.
Q. And was Brian Martin involved in those discussions about these surprising results?
A. I don't recall, but I would imagine he was, yes.
Q. Do you remember sharing the idea or the notion with Brian Martin that some or all of these manufacturers had misrepresented the class 0 status of these products?
A. I don't remember explicitly that.
Q. Did you have any reason to consider that this situation where so many, so high a proportion, had failed class 0

might be replicated across the market more generally?
A. Well, that's why it was necessary for it to be given further consideration.
Q. Did you actually, to the best of your recollection, tell the department in terms that your suspicions -- I think this is a fair way of encompassing what you've told us -- were that manufacturers were routinely misstating the class 0 status of products for which class 0 had been claimed?
A. Probably in broad terms, yes. I mean, I wouldn't couch it in terms of manufacturers in general. I think you would have to caveat that with "some" manufacturers, because I'm sure equally there were manufacturers that, you know, were playing everything by the book and their products and so on were properly supported by their performance.
Q. But seven out of 11 is a very substantial majority, isn't it?
A. Yes, from the small sample that we looked at.
Q. Indeed. But looking at the small sample of the data set nonetheless, I would suggest to you, I think, is sufficient for you to be able to draw at least the provisional conclusion that the market, if not riddled with misrepresentations about class 0, was sufficiently full of them to warrant serious concern.

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A. There appeared to be something that needed further consideration, yes.
Q. And that, so far as you can recall, was something warranting consideration that the government knew -- is this right -- had to be considered?
A. Yes.
Q. Can I ask you about the ACM test again.
If you go back to page 11 {BRE00041882/11}, just to link it up with class 0, you can see the second paragraph, under the heading "Rainscreen Panels", and it says there:
"The aluminium cladding panels achieved a Class 0 performance when tested to BS 476 parts 6 and 7, both their performance in the fire propagation test and the surface spread of flame test showed they fully met the requirement of this classification."
Now, given the test performance of the full system using ACM as the cladding panel which others at BRE have told us were shocking, and you've seen the figures, did that result from the BS 476 test surprise you?
A. I don't recall but -- no, I don't recall what I thought at the time in relation to that. I mean, obviously, this is a factual run-through then test type by test type of the results that were achieved against those particular test methods.

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Q. But did it not strike you at the time that here you have a BS 8414 test, as it became, Fire Note 9, full system test with ACM cladding with a polyethylene core that performs in the way it did, with flames reaching above the top of the rig before six minutes on the one hand, and having to be terminated early, but on the other, those panels, when tested under BS 476-6 and 7, passed with flying colours? Putting those two together, did that juxtaposition not surprise you?
A. Well, it probably did at the time but I don't recall first-hand what I thought back then.
Q. Or did it simply confirm your own historic negative views about the utility and reliability of small-scale tests?
A. Yes, it would certainly have -- that would have been one of the issues, yes.
Q. Right.
Now, let's go down to page 14 {BRE00041882/14}, then, in the same document, and to the final paragraph under the heading "Rainscreen Panels" there, you can see it on the screen. There you have the results obtained from the single burning item test summarised; yes?
A. Yes.
Q. You can see that in the final paragraph, because you have FIGRA and SMOGRA --

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A. Yes.
Q. -- and THR results.
It says:
"The aluminium system generated high rates of fire growth and in both cases was extinguished early due to excessive temperatures and fire growth. This is reflected in the indicative classification of D-s2, d0."
A. Yes.
Q. On page 19 {BRE00041882/19}, if we just go to that, the penultimate paragraph of the page, under "Rainscreen", the penultimate paragraph there says:
"The aluminium sheeting system achieved the poorest classification in both tests, although it was the only system to achieve class 0 in the British Standard tests."
Now, there it is.
A. Yes.
Q. There's the juxtaposition in clear terms.
A. Yes.
Q. Did that result surprise you or concern you in any way?
A. Well, I think it was a clear indication of the sorts of performances or the performance that we were getting in relation to that test.
Q. Do you remember whether any discussions with the department ensued as a result of that conclusion,

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particularly set in the context of the other parts of these conclusions I've been showing you?
A. Yeah, I mean, I don't know what discussions took place with the project team, but it would have been, I'm sure, part of the discussion that then led to the drafting and was incorporated within the thinking around the criteria in BR 135.
Q. In your own mind, were you clear, if not before this time, then certainly by this time as a result of these tests, that there ought to be very grave concerns about any regulatory system which continued to permit class 0 external rainscreen panels to be used as a standard for fire performance on high-rise buildings?
A. It was certainly pointing in that direction, yes.
Q. Well, pointing in that direction; I think you'd arrived at the destination, hadn't you?
A. Yes. Okay.
Q. Yes? Yes.
A. Yes.
Q. And specifically, you knew that a panel might achieve class 0, but also only achieve class D when tested under the Euronorms?
A. Yes.
Q. So you knew from this -- is this right -- that when or if a builder in the UK opted for a class 0 rainscreen

panel, let's assume it had genuinely achieved class 0, then that product might only achieve a class D under the Euronorms?
A. Yes, I think that -- you had -- from the RADAR projects it was very clear that, because you're moving from sort of one methodology to a completely different methodology, you will get some materials, products that translate in terms of performance with the -- between the national and the European classes, but then you will get outliers as well. You will get some that will do better and some that will do worse. This is clearly, yes, an indication that moving across to the European system is -- well, or was more beneficial in terms of the safety levels in the main than using the national classification systems.
Q. You say more beneficial in terms of safety levels. Can we just explore the way you've just put it. Two questions.
First: do you accept, on this data, that a PE-cored aluminium product would not have been deemed suitable for use on any building above 18 metres if evaluated only based on the Euroclass test and diagram 40?
A. Correct, yes.
Q. But if evaluated based on the national classification system alone, class 0 in this case, the PE-cored

aluminium product was considered suitable for use on buildings over 18 metres?
A. Yes.
Q. Did you therefore have cause to consider at this point whether class 0 was an appropriate and safe metric for external surfaces of high-rise buildings, particularly in light of these test results?
A. Well, I don't recall exactly what the discussion would have been at that time. As I say, the main focus of this was around the development of the large-scale test method, and it was anticipated that that was going to be the way forward for buildings above 18 metres at this time.
Q. Yes. We'll come in due course to looking at RADAR and the transition period.
A. Yes.
Q. But just focusing on class 0 for the moment, did you consider at this stage of the project, or indeed at any time afterwards in light of these results, that the national reaction to fire classification ought to be withdrawn from use in relation to the external wall of high-rise buildings?
A. I mean, I think it was generally understood that they would ultimately be removed, and I think the only thing that was up for debate is what was the point at which

the national classes would be removed. Obviously, that became -- that was a decision that was a government decision based on other factors.
Q. Did you have a discussion at this time with Anthony Burd or anybody else in the department about removing class 0 in light of this test programme?
A. I don't recall. I mean, certainly at this particular time, the European test standards were not embodied within the approved document anyway.
Q. I think they'd just come in, in fact.
A. Okay. So --
Q. I mean, you may be right, but there's a 2002 amendment. Whether it was before or after September, I'm not sure I'm able, standing here, to tell you.
A. Yes.
Q. But it certainly postdates the discussions about the RADAR report.
A. Yes. I mean, it was the RADAR reports that led to the incorporation of the European norms in the approved document.
Q. Yes, and my question, coming back to it, is: in a sense leaving aside the discussions of the RADAR report and the harmonisation project, which we're going to come to, were the results of this test not the clearest flag that even though class 0 might be withdrawn at some point,

now was the time to do it?
A. I mean, that wasn't a decision for me to be taking. I mean, we were presenting the data and the results for others to discuss and take forward.
Q. Did you expect government to act on it and accelerate the time at which class 0 was withdrawn, based on these results?
A. Well, I don't know, in terms of accelerate. I mean, we understood that there was a commitment to do that. I'm not sure we understood exactly what the timeline for that was, so I wouldn't necessarily be looking in terms of accelerating that.
Q. What was the commitment you've just described to remove class 0 that you understood at the time?
A. Well, under the construction products directive, there was a requirement based upon member states of the European Union to adopt the European norms in preference to any national classifications. Any work on national classifications was halted at the point that the European tests were under development, so it wasn't possible to update the national standards from that point on, and the reason being that, you know, they would then become redundant over the -- you know, when the new European norms were published, and they needed to then be -- the national standards would have to be

withdrawn.
Q. Over what timeframe? We'll come to see some documents on this later.
A. Yes.
Q. But at this time, just getting your evidence on this, September 2002, what was the commitment? What was the time horizon by which class 0 would be scrapped?
A. Well, they weren't developed beyond -- well, from about 19 -- late 1990s.
Q. No, sorry --
A. The national standards.
Q. September 2002.
A. Yes.
Q. If you'd asked Anthony Burd, "When are we going to scrap class 0?", what would he have told you, as you saw it at the time?
A. Well, I think prior to the publication of the European supplement, everybody expected that to happen in 2002.
Q. Right.
A. But that didn't happen in 2002, as I said earlier, for other reasons.
Q. Now, I just want to ask you one or two questions about the IAG.
Can we go to {BRE00042045}, please. We'll take this quickly.

Looking at the front cover of this document, this is the generic data supporting the revision of BR 135 dated June 2002, which was prepared by the BRE for the industry advisory group; yes?
A. Yes.
Q. And also the joint working group of BSI technical committees, and you can see that. It's dated 26 June 2002; therefore, it's before the analysis report and the closing report of the 1924 testing programme, isn't it, just in chronological terms?
A. Probably, yes.
Q. Well, it is.
A. I accept what you say, yes.
Q. Because the dates are that.
A. Yes.
Q. Just pausing there, did you put this document together?
A. No, I wouldn't have done.
Q. Do you know who did?
A. The project team would have done it, so I guess Sarah Colwell and Brian Martin predominantly.
Q. Was it approved by the department before it was presented to the IAG?
A. Yes, it would have been.
Q. Who approved it on behalf of the department? Would that have been Anthony Burd?

A. Probably, yes.
Q. What was the role of the BSI committee and the IAG in this project?
A. Sorry, in the ODPM project, the research project?
Q. Well, the revision of BR 135.
A. Right. So the IAG was there, I think as we've already discussed, to provide input to the project, to act as a steering group, to provide their real-world knowledge, et cetera, and to guide the programme, and to provide feedback and comments in terms of their understanding and anything that wasn't clear, et cetera.
The joint working group, I guess this was presented to them to assist them in the development of the British Standard development.
Q. Was this document released more widely as part of the consultation on the revisions of BR 135?
A. I don't know.
Q. Can we go to page 3 {BRE00042045/3}, please. We can see there a list of the systems tested, ventilated cavity systems and render systems; yes?
If we go to page 5 {BRE00042045/5}, there's a table of generic test data for the ventilated cavity and render systems. Do you see that?
A. Yes.
Q. And then under that table you can see the PE-cored

aluminium panels, they're at item 3. You see it says "Aluminium"?
A. Yes, yes.
Q. And you've got the fail there.
At page 8 {BRE00042045/8}, they're described as "Aluminium-based cladding panels".
A. Yes.
Q. You see that?
A. Yes.
Q. Under system 3, "Aluminium-based cladding panels".
Why were they described like that, do you know?
A. No, I don't.
Q. On one view, that is a misleading description, isn't it, because it doesn't identify the presence of a polyethylene core?
A. Yes, yes. I don't know why they weren't defined as we saw earlier.
Q. Did it occur to you at the time that that description might lead a reader to conclude that the cladding described was pure aluminium, not a composite at all?
A. I don't recall. I mean, I think if I had have been looking at this, then it's something I might have raised. I don't recall.
Q. Right.
Do you know whether any members of the IAG other

than government or the BSI joint committee were actually told that the panels tested were ACM with a polyethylene core?
A. Well, usually, typically in these types of projects, the IAG would have some physical meetings as well and, you know, it's usual that PowerPoint presentations and so on would be given and there would be discussion around some of these things. So I would have thought they would have known.
Q. But you don't know because you weren't there?
A. I don't know for sure. Of course I don't know for sure.
Q. Do you know whether anybody on the IAG or the BSI committee raised any concerns in respect of the performance of the aluminium-based cladding panels --
A. No.
Q. -- tested at full scale or intermediate or bench?
A. No, I don't.
Q. You don't.
Can we then move to the conclusions and recommendations in the analysis report of 19 September 2002. It's at {BRE00041882/24}, back to that document.
If you look at that, "Conclusion and recommendations", in fact I think it is right that there are no actual recommendations in this section, are

there? There are conclusions but not recommendations.
A. Yeah, I mean, without reading them all in detail, but I take your -- I'll take your analysis, yeah.
Q. But if we go back three days to 16 September 2002, the closing report, at {BRE00041895/13}, let's look at that, this is paragraph 5 at the foot of the screen, it says this:
"The aluminium sheet product satisfied Class 0 requirements, but in the full-scale, intermediate scale and Single Burning Item test, proved to be one of the worst performing products. As the current guidance in Approved Document B asks for Class 0 performance in Diagram 40, these issues may require further consideration."
This goes over ground we've covered before, but the fact that the aluminium sheet, as the ACM PE is again described here, satisfied the requirements of the approved document but nonetheless resulted in a catastrophic full-scale fire before six minutes may require further consideration -- that's all you put, all this document said.
A. Yes.
Q. I mean, did you intend or did the BRE intend that this result be an urgent red flag for immediate consideration and action, or simply a mild indication that the

government might like to have a think about this in its own sweet time?
A. I don't recall at the time. I understand the way that you're interpreting that, but, I mean, the fact that it's there, we would expect that to act as the flag for the department to decide what they then wanted to do from thereon in.
Q. Is that right?
A. Yes.
Q. So this oblique, rather loose recommendation, "these issues may require further consideration", you thought that was enough to spell out to the government that the use of ACM panels over 18 metres presented an immediate and present risk to life, did you?
A. That they needed to consider the issues associated with all of this, yes.
Q. You see, Dr Smith, what you don't do in this report is to spell out in big letters to Anthony Burd that unless the government does something now about ACM panels over 18 metres, people will die. I mean, that's clear, isn't it?
A. Well, it's not put in those terms. You won't find, I don't think, any BRE report that ever speaks in those terms, because our role is one to present the technical evidence and the technical facts and the data, and then

to signal what we think needs to be considered. Then it's up to the department, with their statutory committees or whatever, to decide what they consider and what they want to do going forwards.
Q. Isn't there an intermediate step between the data and government policy, and that is to apply a human interpretation on the data, convert it into foreseeable human consequences, and then spell those out to the government so that government can enact proper policy, rather than leaving it to government to grub about in the data?
A. Well, I mean, all I can say is what I've already said, and, I mean, you won't find, I don't think, in any BRE report views expressed quite in the terms that you're expressing them now. It was always based on, you know, the technical, scientific evidence, and then issuing a flag as to the issues that they should be reflecting on. And also, I mean, this is the report that is in writing; there were meetings and discussions that would have been had as the project progressed around these factors as well. So, you know, none of this would come as a surprise to them when they first read this.
SIR MARTIN MOORE-BICK: It might be suggested that what is missing, apart from what Mr Millett has suggested, is a clear assessment of the significance of the data. You

give the government the data.
A. Yes.
SIR MARTIN MOORE-BICK: You say, "You think about this data". But you don't give them any assistance on assessing its significance. Do you think that was an omission?
A. By that, do you mean in terms of the life safety, significance in terms of --
SIR MARTIN MOORE-BICK: Well, I can understand why you may not have thought it was BRE's role to play up the human aspect, if you like, of this, because you're there to do a scientific job. But it might not be regarded as an impermissible step for the BRE to take to say, "The data we've got on these panels indicates that they are highly combustible and liable to create a significant fire". I'm not putting this very well, but do you see what I mean?
A. Yes, yes.
SIR MARTIN MOORE-BICK: In other words, to spell out what the data are telling you, albeit in scientific terms.
A. Yes, I understand what you're saying, and perhaps that could have come through in the closing report. I mean, I think it's self-evident that those conclusions were drawn in the previous reports, in terms of, you know, this hasn't performed well -- well, it's performed badly

in these contexts. So I think the information, for me, is all there, but maybe what this doesn't do is perhaps pull it all together in quite the way that you're suggesting.
SIR MARTIN MOORE-BICK: I ask the question because you told us this morning that the results of the test indicated to you that this material should never be allowed on a high-rise building.
A. Mm-hm.
SIR MARTIN MOORE-BICK: I'm not sure that I would have derived that assessment from what is written in paragraph 5. Do you think you would have done?
A. Well, as I say, that was said in the context of the large-scale test method in the BR 135 criteria that we were developing, that would, in our view, then slam the door shut on the use of these types of products on buildings over 18 metres.
SIR MARTIN MOORE-BICK: All right, thank you.
A. So, you know, it was all part of that journey, really.
SIR MARTIN MOORE-BICK: All right. Thank you very much.
MR MILLETT: It's right, I think, isn't it, that the reports and the data from this project have never, before this Inquiry began, been released into the public domain?
A. I'm not entirely sure, to be honest. I mean, obviously you saw the document that was circulated to BSI and the

IAG. I don't know if this was reduced -- any of this was presented in -- for the 2006 revision of ADB as part of the consultation then.
Q. The BRE never disseminated information, for example, about the testing carried out on an aluminium composite material --
A. Well, we wouldn't do that directly anyway. I mean, as part of -- if it was part of the consultation package, that would be done by the department. They generally pull together a package of technical evidence for people to review to consider the proposed amendments.
Q. I think it's right though, isn't it, that the BRE didn't take it upon itself to disseminate the information in these reports?
A. No, I mean, BRE, as a general rule, is not permitted to do so without the full agreement of the department anyway, because we're bound by confidentiality in all of the frameworks and the contracts that we undertake for them. So we can only publish or disseminate anything if we're permitted to do so, since privatisation.
Q. Do you know whether anybody in government made a positive decision that the reports and data from this work should not be disseminated outside government and the BRE?
A. I don't know.

Q. Have you yourself ever considered whether these reports and data should be released into the public domain because of what they signify?
A. I don't recall at the time. As I say, I can't remember if they were released as part of the consultation package.
Q. Do you recall at any time giving any consideration before the Grenfell Tower fire to revisiting this test data or, alternatively, at least to the need to warn industry and others about the potential dangers of using aluminium composite material with a polyethylene core above 18 metres?
A. No, I don't. I mean, as far as I think I was concerned, and potentially other colleagues in BRE, once the amendments to Approved Document B were made in the 2006 revision, it was considered that, as I said, that had closed the door on these types of products being used above 18 metres and, therefore, you know, that job was completed ——
Q. Did you really think that?
A. —— for the time being.
Q. Did you really think that? Because you know, of course —— and we'll come to it in detail no doubt later on, but just picking up on that answer —— of course the 2006 amendments continued to contain class 0 and

diagram 40, didn't they, as the linear route to compliance for external walls?
A. For above 18 metres?
Q. Yes.
A. Not —— you couldn't just use class 0 in isolation, no. Not my interpretation, anyway, because there are restrictions placed on the insulation as well.
Q. Right. Okay, we'll come back to that in due course.
After the UAE fires in 2013 or the Dubai fires in 2014 or 2015, did you think again about revisiting this test data?
A. Me, personally, no, I did not. I can remember having some discussions with colleagues around the time of at least one or two of the Dubai fires and just asking the question, "Now, we are sure that this isn't happening in the UK and can't happen in the UK, aren't we?", and, you know, being satisfied that, yes, we weren't, through our fire investigation project, seeing similar sorts of materials on buildings, and (b) that the BS 8414 system, including the BR 135 classification, was being utilised. To that end, you know, we'd never been either presented with, to my knowledge, prior to Grenfell, a BS 8414 test that involved a polyethylene–cored ACM on a BS 8414 test.
Q. Do we take it from that answer that your view was that

it wasn't necessary to look at these test reports in the light of the UAE or Dubai fires and it couldn't happen here simply because ACM with a polyethylene core was not used in the UK built environment?
A. That's correct.
Q. Is that a fact?
A. That was my view.
Q. Right.
A. It's not a fact ——
Q. It's not a fact, no.
A. —— as we know now, but at the time, that was my view.
Q. Did you ever advise the government to release these results?
A. I don't know whether —— what the discussion was around that, no.
Q. We know that the BRE never, as it were, blew the whistle and put the results out themselves or issued a public health warning to clients about the dangers of ACM panels. Just help me, why was that?
A. Because that wasn't seen as our role to do that. As I said earlier, we were bound by confidentiality. We couldn't just decide on our own that we were going to release results that others had paid for into the public domain.
Q. Let's turn, then, to something we've been discussing

before, the RADAR 2 consultation on harmonisation. I would like to go back in time a little bit, if I may, Dr Smith, and look at the position at the beginning of 2001 and your own involvement in that project.
First, I think it is right, isn't it, that RADAR stands for "Research on Approved Document B and Revision", doesn't it?
A. I don't know. I mean, I ——
Q. Right. Well, I'm not going to chastise you for the acronym.
A. Because that was a Warrington project, so ...
Q. Now, I'm summarising —— please tell me if this is right or wrong —— as a result of the European construction products directive, the department had needed to consider amendments and updates to Approved Document B in order to allow for the use of European fire test methods.
A. That's right, yes.
Q. The RADAR research project was initiated, just help me, to assist the department to understand how the new European methods and classification system should be implemented into UK regulations and guidance.
A. That's my understanding, yes.
Q. And to explore the impact of doing that; yes?
A. That's my understanding, yes.

Q. And RADAR was research carried out by Warringtonfire, commissioned by the department.
A. Yes, that's correct, as I understand it.
Q. Again, taking it shortly, do you agree that RADAR 1 was about fire resistance, RADAR 2 was about reaction to fire and RADAR 3 was about roofs and roofing products?
A. That's my understanding, yes.
Q. And the focus of the research was on —— is this right? —— comparing the classifications achieved by various products when tested under the Euroclass system as against the classifications achieved by the same products under the national class system and seeing what happened.
A. That's my understanding, yes.
Q. Now, the product of Warringtonfire's RADAR 2 research on reaction to fire were two reports, I think, published in May 2000. I'll just show them to you. Part 1 is {CLG00000950}, let's just pop that up, please. That's the first page. If we go to page 2 {CLG00000950/2}, you can see that this bears the title:
"Correlation of UK Reaction to Fire Classes for Building Products with Euroclasses and Guidance on Revision of Approved Document B.
"Part 1: UK and European Test Data and comparisons between classification systems."

You can see at the bottom right—hand corner it bears the date of 23 May 2000.
If we go to {CLG00000951}, please, we can find part 2, and that bears the date of 26 May 2000, as you can see from the bottom right—hand corner, and its title is:
"Proposals for the European Supplement to Approved Document B."
Now, I've shown you both of those, just as their first pages, but were you familiar with these reports when they were first published?
A. Yes, I would have been. I would have had a copy sent to me, I'm sure.
Q. The RADAR project was a PII, or Partners in Innovation, project, wasn't it?
A. Yes, it says so there, yes.
Q. Yes, and that meant, I think, that 50% of the funding for the project came from the department and 50% from industry.
A. Yes, usually, yes.
Q. Do you know which industry partners contributed to the funding for the RADAR 2 project?
A. No, I don't.
Q. You don't.
It's right also, I think, that RADAR 2 was steered

by an IAG, an industry advisory group, wasn't it?
A. I would imagine so, yes.
Q. Right. I think Warringtonfire was the lead partner?
A. Yes, it was Warrington's project with the industry partners, yes.
Q. Yes, and other members were representatives from within industry, so manufacturing of all kinds of construction.
A. I would think so, yes, and it was likely to be trade associations, I would imagine.
Q. Now, if we go to the first of these reports at {CLG00000950/3}, we can see that there's a table at the foot of the page under the heading "Organisation of Project", and you can see that from the DETR, we've got A Edwards, M Payne and D Smith. You can see who the manufacturers and bodies are if you go over the page and the various individuals.
Going back to page 3, the D Smith that I've just pointed out to you there, is that you?
A. Yes, it would have been. I don't know why I was listed as DETR, because obviously I never worked for DETR, so ...
Q. Well, I was going to ask you that. Is it an indication of your closeness of working with the DETR, at least in respect of this project?
A. I don't know —— no, I don't know why I was put down

there as DETR.
Q. Now, your role, I think, was as a co—ordinator, because it says so; you're in the "Co—ordinators" column.
A. Right.
Q. Is it right that, among a number of other contracts, in 2001, the BRE and the department entered into a framework contract entitled "European harmonisation of fire standards and representation on BSI regarding smoke control"?
A. Probably. I would have to see it to confirm that that was the title and what the scope of it was.
Q. Right. Well, let's ——
A. Because on smoke control ...
Q. Right.
In 2001, I think you were also a member of BRAC, weren't you?
A. No.
Q. The Building Regulations Advisory Committee part B working party.
A. I was never a member of BRAC.
Q. You were never a member of BRAC.
Do you remember drafting or contributing to the drafting of the European supplement to Approved Document B which was considered by the part B working party?

A. I probably did assist, yes, on that.
Q. Who drafted it?
A. It would have been based on the outcome of the RADAR projects.
Q. And who drafted it?
A. I don't recall.
Q. Did you advise BRAC's part B working party at meetings?
A. I would have presented, potentially.
Q. Right.
A. And, you know, the way that that would have worked is, you know, you give a presentation as to potentially the outcomes from the RADAR project and the correlations that had been developed, and then, you know, it would be a question and answer session, and then the working party would agree or disagree and documents would be progressed accordingly.
Q. Can we go to {CLG00001051}. This is a report of a meeting of the part B working party between BRAC and the Scots equivalent, BSAC, which was held on 28 February 2001, as you can see.
A. Yes.
Q. Under the background, you can see in the second sentence it says:
"The principal objective of the meeting was to consider the issues surrounding the harmonisation of

fire tests across Europe and how the guidance in Approved Document B and the provisions of the Scottish Building Standards may need to be revised to reflect the proposed harmonised system. It was intended to bring together the salient issues for BRAC and BSAC, as well as for the UK Regulators, preparing for harmonisation."
You can see that?
A. Yes.
Q. If you go to paragraph 2, under "Summary of Proceedings – Salient Issues", it says this:
"Significant contributions to the meeting were made by Dr Debbie Smith of BRE(FRS) and Dr Paul Stollard of the Scottish Executive ..."
A. Mm–hm.
Q. Now, what was your role there in making significant contributions?
A. Yeah, I don't recall first–hand, but looking at this, as I said prior to seeing this, I probably gave a PowerPoint presentation or the like based on the status at that point –– I don't know if the RADAR project was finished or whether they were still ongoing –– as to where they were at and what they were starting to show.
Q. If you go to paragraph 5, same page, a little lower down, you can see that the report notes as follows:

"5. The comparative standard [I think this is you and Dr Stollard explaining] of EN tests against the current National Standards was discussed in general and it was agreed that the harmonised fire resistance tests were generally at least as good as the current tests.
"6. However, after discussing the RADAR 2 project, such a conclusion was not reached with regard to the reaction to fire tests as the test methods are significantly different. Dr Smith advised that the proposed tests are more quantitative as they rely on measuring heat release rather than measuring by eye. It was noted some products do better under this method, some do worse."
A. Mm–hm.
Q. Now, can we take it that what I've just shown you there from the note of this meeting is an accurate record of what you said?
A. In all probability, yes.
Q. You don't have a reason to dispute it ––
A. No.
Q. –– sitting there now, all these years later.
A. No.
Q. If we go to paragraph 7 {CLG00001051/2}, a little bit lower down, you say this:
"Dr Smith gave a presentation on the draft European

Supplement to Approved Document B, which resulted in detailed discussion of a number of issues – both technical and procedural. There was general support of the document, although some points were identified as being in need of further clarification."
Can you remember what the issues were that were discussed in detail as a result of your presentation?
A. No, I'm sorry, I don't.
Q. Can you remember what the points were that were identified as being in need of clarification?
A. No. I don't, no.
Q. Do you remember whether any changes were made to the document as a result of the discussions that took place?
A. Well, invariably they would have been, because that's the whole point of these meetings. You know, you present something, you take feedback and then the feedback has to be addressed accordingly. Or the guidance is given at the meeting that, you know, it needs to do this or it needs to say that or this needs to be clarified, and it's dealt with there and then at the meeting.
Q. Right.
Let's go to the RADAR 2 report itself at {CLG00000951}, which is the part 2 report. I showed you the front page, 26 May 2000.

If we go in that document, please, to page 4 {CLG00000951/4}, you can see there's a table, table 2, and that shows the transpositions of UK class 0 to Euroclasses. Then there's a table 3, transpositions of UK class 1 to Euroclasses, and so on, classes 2 and 3 to Euroclasses.

If we look at the bottom of table 2, can you see that you have three class 0 levels which transpose to C, D and E?

A. Mm-hm.

Q. If you look at the product identifications on the right-hand side, you can see that there are four products which, although they test to class 0 under the national classification, fall below B, and in the case of D, there are two products. Do you see that?

A. Yes, I can.

Q. If you go to figure 1 on page 15 {CLG00000951/15}, you can see a key. Here is figure 1, which is attached to the back of this report, and we can start with the key. If the key could be blown up, please. It's at the bottom right of the screen. I just want to go through with you how this worked.

You can see some seven product types; yes?

A. Yes.

Q. So wood has a little roundel, paints have a cross in

a ring, plastics, mineral wool, wall coverings, cellular plastics, which has a little box and a dot in it, and board and sheet. Do you see that?

A. Yes.

Q. Who devised that set of categories, do you know?

A. No. It would have been Warrington, I'm sure.

Q. Right. Do you know into which category aluminium composite panels sat?

A. No, I don't.

Q. Now, we know from elsewhere in this report that there were 64 products chosen and tested for the purposes of this exercise, weren't there?

A. I don't know how many were, but yes.

Q. Take it from me.

A. Yes, yes.

Q. Do you know whether any ACM panels were selected?

A. No, I don't, not without reviewing all of this.

Q. And the same question, composite: do you know whether any composite panels were selected?

A. No, I don't.

Q. Do you remember whether anybody turned their minds to ACM or any other composite panel forming the rainscreen product at the time of this exercise?

A. No, I don't.

Q. Do you consider or did you consider at the time,

perhaps, that the data in this table was representative of the range of products actually available on the market at this time?

A. I don't recall. I mean, my role in this was very much arm's length. Obviously, you know, Warrington were carrying out the research under contract to the department, so I would have just been the recipient, really, of information. I wouldn't have had a particular knowledge, inside knowledge, of what they were doing.

Q. If we pan back out so that we can see how this table worked. I just want to see if I can follow it through with you. We'll come back to it in due course, but does it work like this: that you take class 0 at the bottom, on the bottom axis, and you trace it through on a product-by-product basis and you see which Euronorm you meet?

A. Yes, that seems to be the case.

Q. And you can tell which products they are by reference to the key; yes?

A. Yes.

Q. So looking at class 0, you can find which class 0 products are A1; there's one of them, which is mineral wool.

A. Yes, yes.

Q. That's the X. If you go up, I think there are nine which are A2.

A. Yes.

Q. And you can see there's a combination of mineral wool, paint, et cetera.

A. Yes.

Q. Do you see that?

A. Yes, I do.

Q. Then B has a larger range of products, and then above that C, D and E.

A. Yes.

Q. And you can tell which products meet which.

A. Yes.

Q. Just looking at that again, you can see the four products which meet C, D and E --

A. Yes.

Q. -- but which are also class 0 --

A. Yes.

Q. -- of which two are boxes with a dot, cellular plastics; yes?

A. Yes.

Q. One is wood, which is E, and one which is a box with an X in it --

A. Yes.

Q. -- which is a wall covering.

A. Yes.
MR MILLETT: So that's how it works, good.
Perhaps we should break at this point. I'm going to go on to some detail here, but, Mr Chairman, it's probably a good time to break.
SIR MARTIN MOORE-BICK: Is that a convenient moment?
MR MILLETT: I think so.
SIR MARTIN MOORE-BICK: Right. I think we had better have a break before we get too deeply enmeshed in all this.
We'll stop now, then. We'll resume at 3.35.
THE WITNESS: Okay.
SIR MARTIN MOORE-BICK: Same as before: please don't talk to anyone about your evidence while you're out of the room.
THE WITNESS: No, okay. Thank you.
SIR MARTIN MOORE-BICK: All right? Thank you very much.
(Pause)
Thank you very much. 3.35, please.
(3.19 pm)
(A short break)
(3.36 pm)
SIR MARTIN MOORE-BICK: All right, Dr Smith?
THE WITNESS: Yes, thank you.
SIR MARTIN MOORE-BICK: Good, thank you.
Yes, Mr Millett.
MR MILLETT: Yes, thank you, Mr Chairman.

Dr Smith, can we now please go to {CLG00007308}. We'll flip, I think, back and forth from the RADAR report to this document.
Now, this is a minute of a meeting of the part B working party held on 10 May 2001 at which you were present.
A. Yes.
Q. You can see your name and Anthony Burd's name there as one of those present.
A. Yes.
Q. If you look down at paragraph 1.3, you can see it says:
"Dr Debbie Smith from BRE/FRS is presently serving the Working Party and brings her expertise on fire testing and European harmonisation to the group."
Is that a fair description of your role in this meeting?
A. Yes. Yes, so I wasn't a permanent member of the working party, I was just called in to provide input as needed.
Q. And you had expertise on fire testing and European harmonisation?
A. Yes.
Q. Let's go to page 7 {CLG00007308/7}, and you can see a heading on that page, "RADAR 2 - Reaction to Fire". Below it there is a paragraph 5.7.
Starting with the second sentence in that paragraph,

it says this:
"Dr Smith explained that one problem was that there was an uneven distribution of products submitted for testing (since PII is 50% industry led, industry sent in the products that it wanted to send in. There is a natural reluctance by industry to put in poor performing products)."
In simple terms, does that mean that the data set in table 2 of the RADAR report which we've just been looking at is unrepresentative of the market or is skewed in some way?
A. Potentially, that's -- well, that's potentially what that's saying. I mean, obviously, my report back on this would have been based on the information that had been imparted by Warrington in their running of the project, so I can only, you know, go by what this says, yes.
Q. Yes. Did you factor in that potential for bias into your own work?
A. Well, insofar as we had a data set and whatever the data set was. I mean, I would have to go back and look to see where the concerns were around that being -- you know, the potential for that causing bias.
Q. Well, did you factor that potential for bias into your own work and your own interpretation?

A. I mean, I'm sure there would have been some consideration of it and potentially some discussion of that with Warrington as to -- to understand the background to that.
Q. But you didn't have that --
A. It's difficult to recollect that now, yes.
Q. Does it follow from your identification here of that potential for bias that although table 2 records the majority of class 0 products tested as having achieved class B, in reality there might be many products not submitted for testing but nevertheless available on the market in the United Kingdom, perhaps in common use, that wouldn't or might not have been able to achieve a rating of class B?
A. I think that's probably unlikely in actual fact because I think a lot of the industry were surprised to some extent -- they didn't have a huge amount of experience with the European norms at this particular time that the RADAR project was going on, so the extent to which they could have interfered, in effect, with the distribution of products they submitted was to some degree limited anyway.
I mean, in the next paragraph there's reference to the aluminium foil-faced insulations, and I think my recollection of that is that came as quite a surprise to

that sector of the industry, that they performed significantly worse in the EN test standards than they did in the BS.
Q. But you're making a criticism here, I think it can be read. What would you have liked to have seen, as a scientist, which would have provided an even distribution of products? What other products would you have liked to have seen?
A. I can't answer that right now. I don't remember the details, if you like, of all of the 60 products that were tested. I mean, you would need to go back and look at that. I'd have to try and refresh my memory somehow to remember all of this.
Q. Can you go back, please, to the RADAR report, {CLG00000951/4}, table 2. Just look with me at the results.
Table 2 —— we looked at this before —— you can see the class 0 but also C, D and E results there for those four products.
A. Yes, yes.
Q. Looking at those four products, can you tell us, what work had been done to work out how commonly used the class 0 products at the bottom of this table achieving those C, D and E results were in the UK?
A. I don't know.

Q. Do you know whether any work had been done to work out how commonly used those products were?
A. No, I don't.
Q. So for all you knew, product ref 1/03, which achieved an E, could have been a market leader above 18 metres?
A. I don't know.
Q. No, but that's the point. I'm asking you why you don't know. My question is: did you ever ask yourself that question, "I wonder how commonly used these three or four types of product or four products are in the United Kingdom"?
A. I don't recollect that. As I say, the project was very closely run by Warrington in conjunction and discussion with the industry and the trade associations that provided the materials, and I think there was probably a general expectation that the trade associations would do a certain amount of that normalisation to ensure that they had a representative selection of the products that they were representing. But, yeah, I can't answer that. I can't remember the details of the discussions that took place around this that I was party to.
Q. What were these products, do you know?
A. No, I don't, without, you know —— sat here now, I couldn't help you with that.
Q. Did you, in your work advising the working party, ever

question the methodology of using this bell—curve type of approach to transposition, without knowing about frequency of use?
A. No, I don't think we did quite in the way that you're suggesting. I mean, the main goal of this was, obviously, the removal of barriers to trade. It was intended to —— well, it wasn't intended; it was a legal requirement that any barriers to trade were removed and that the European classes were adopted, and, you know, it wasn't —— the same kind of treatment had to be applied across the data sets that were provided.
Q. I think the answer to my question is no, you didn't question that methodology.
Can I ask, can you tell us why that hadn't occurred to you?
A. I don't recall the discussions that we had had around all of this at the time, but, yes, it would have been —— we would have discussed the best approach and how to best go about this.
Q. Did anybody, to your knowledge, whether in May 2000 or May 2001, the RADAR reports and then this meeting, consider whether the data set used to transpose national classes to Euroclasses was fairly representative of what was on the market in the United Kingdom at the time?
A. I'm sure there would have been discussion of that with

Warrington and their project team.
Q. Do you know what consideration was given to the possibility that this was an unrepresentative test by the IAG or the working party or by the department?
A. I don't know what —— no, I don't know what discussions took place outside of that, of course.
Q. Now, at the time that you and the part B working party were considering the RADAR 2 reports in May 2001, I think it's right, isn't it, that the guidance in Approved Document B contained only one suggested restriction for the use of cladding panels on the external face of buildings above 18 metres, and that was that such panels should meet the provisions of diagram 40 and therefore national class 0?
A. Yes, I think that's right.
Q. Yes.
In 2001, as we've already seen, I think you were by now aware that the fire at Knowsley Heights in 1991 had spread up the entire external face of the building, despite the fact that the cladding panels used had achieved class 0?
A. Yes. Yes.
Q. And aware of Dr Connolly's testing work in 1994 and his conclusions that class 0 panels could permit extensive and potentially unlimited vertical external fire spread?

A. Yes.
Q. And also, as we've covered I think repeatedly now, the fact that class 0 as a measurement of reaction to fire couldn't, or at least couldn't alone, give an accurate indication of the true fire hazard of a cladding system?
A. Yes, that you needed the large-scale methodology, yes.
Q. And also aware in 2001 of the select committee's recommendation that the class 0 requirement and the approved documents in relation to external surfaces of high-rise buildings should be substituted and replaced by a full-scale test of external cladding systems and what became BS 8414?
A. Yes.
Q. And by now I think you were aware, weren't you, that that recommendation had not been followed by government?
A. BS 8414 wasn't published until 2002.
Q. That's correct.
A. So it wasn't available at this point.
Q. But aware of the recommendation that that test, Fire Note 9, which then became BS 8414, should be substituted in place of class 0?
A. That was the recommendation from the select committee, yes.
Q. Yes, and you knew by this time, May 2001, that that recommendation had not been followed by the department?

A. Well, yes, insofar as the approved document said what the approved document said.
Q. Yes. So that's the background, in essence, and you knew all those things.
In the light of that, let's just move on through the document.
Can we go to page 5 of the RADAR report {CLG00000951/5}. That notes at the end of the first paragraph under 3, "Transposition Options", the following:
"For other products, their position in the classification matrix is dependent upon a number of factors, which may need to be examined on an individual product basis; these factors include:
"(a) the fundamental difference in UK and EC testing systems, especially the use of overall flame spread for UK classification compared to rate of heat release during the early stages of flame attack in the SBI test for Euroclassification."
Is that recording something you said at the meeting, do you think?
A. I don't know where that came from. No, I can't answer that.
Q. If we look at the last paragraph on the page, it says this in the second line, and it's a question:

"Is there any correlation between the i1 index in BS 476:Part 6 and FIGRA in the SBI test?"
Now, it's not clear whether that question is actually answered in this document. Do you know whether that question was ever answered in the course of this working party's work?
A. Yeah, I don't think there was a direct correlation between part 6 and FIGRA.
Q. If we go to table 7 on page 7 {CLG00000951/7}, just help me with this. Table 7 there is the "Heat Release Contributions of UK Class 1 Products", and you can see in the column, you've got "UK Class 1 Product", "EC Class", which has four Bs and then five Cs below the horizontal line, then you've got "BS 476:Part 6", i1 and I, those are the indices there, and then the FIGRA heat release rates; yes?
It's right, isn't it, I think, that i1 and FIGRA are measuring different things?
A. Yes, absolutely.
Q. And i1 is an average of three sub-indices, measures of fire propagation, isn't it?
A. Yes.
Q. Therefore, it's only part of one of the two tests for class 0; yes?
A. Yes.

Q. Whereas FIGRA is a fire index growth rate measured in watts per second, isn't it?
A. Correct.
Q. And again, that's only one element of the SBI test which, itself, is only one element of the Euroclassification, isn't it?
A. Correct.
Q. So the fact that the correlation was not 100% in any event was only one part of each of the tests, wasn't it?
A. Yes, that's correct.
Q. Yes. So the degree of overlap is small. I don't want to use a word more extravagant than that, but it's pretty limited.
A. What, in terms of the correlation between the two?
Q. Yes.
A. Yes, I would agree.
Q. I think you also agree that the test methods and set-ups were completely different as between these two tests.
A. Absolutely.
Q. For example, do you agree with this: that 476-6 was set up so that the core of a composite panel never sees the heat source?
A. Unless you burn through the outer layer, the outer surface.
Q. Absolutely.

So is this right: do you accept that any correlation made no allowance for the differences in size of sample, the position and direction of the heat or flame source, or the way in which the sample was held in place, or any detailing or returns?
A. Well, they were completely different.
Q. Completely different?
A. You know, the extent in the single burning item test, for example, you have to include joints and a representative fixing method, which it's not possible to do that in the part 6 and the part 7 tests. So, you know, it's comparing an apple with an orange. They're both items of fruit, but they are different.
Q. Yes.
Against that background and, indeed, in the light of that analogy, did your analysis of the results in table 2 of the RADAR 2 report which we've seen with the Euroclasses ranging between A1 and E, with class 0 remaining, cause you any concerns in relation to the class 0 classification as a measurement of fire reaction on the external surfaces of high-rise buildings?
A. So what we attempted to do was increase the performance requirement, if you like. So here, I mean, you'll see that the class 1 products and some of the class 0 products have achieved Euroclass C; we did not include

Euroclass C in the same safety level provision, which was one of the proposals from the RADAR 2 project.
Q. Yes. We will, I think, come back to the class C question in a moment. But were you not concerned by the complete difference between the two tests and the very small degree of overlap in correlation terms between them about the adequacy or safety of the transposition process?
A. Well, I mean, the transposition process was one that was required in law. It had to be done. There was no option because that had been signed up to by the various governments in terms of the European trade discussions around the construction products directive, and what the UK set out to do was to do this in a responsible manner by testing a range of different products and, you know, trying to do that, as I say, as safely as possible, by ensuring that the European equivalents were giving at least an equal or better reaction to fire performance, or fire resistance performance indeed. And I have to say, I mean, the UK went way beyond what any other European country did in that respect.
Q. Maybe it did, maybe it didn't. But did you not think that, given what you knew and given the limits of the data set, 64 products, the transposition was likely to be something of a blunt instrument, given the complete

differences between the two test regimes?
A. Well, I don't know how else this could have been done.
Q. Well, let me suggest that the only way of achieving true and safe transposition, in other words knowing whether a class 0 product achieved class B, was to subject every product to both tests.
A. But that's not a realistic proposition, I would suggest. I mean, it's not for me to say, but obviously to explore with the department, you know, somebody has to carry out that work and has to fund that work, and, you know, that's an enormous task.
Q. Given that, in an admittedly small data set, two out of the seven class 0 products did not achieve class B, that's not a negligible number, is it?
A. Sorry, I'm not following your point there.
Q. Well, you have a small data set, 64 products tested.
A. Yes.
Q. And you have seven class 0 products that don't achieve class B -- sorry, two out of the seven don't achieve class B.
A. Right, so they achieved class C, presumably.
Q. That percentage was not negligible, was it? It was something like 28%. That's not a negligible proportion of mismatches.
A. And?

Q. My point is this, or my question is this: you knew there was a real risk that a product could achieve class 0 but not achieve class B if tested.
A. There were some outliers, but there were a large group where they either achieved better performance or they did achieve class B.
Q. And how was the risk presented by those outliers assessed?
A. It was flagged. It was clear that there were outliers. You know, it was reported in the RADAR results to the department.
Q. Was any error factor built into the transposition process to cater for the 28% of outliers? You call them outliers, but, I mean, two out of seven.
A. Yeah, but, I mean, they were when you look at the whole grouping for class 0. Insofar as -- I mean, we couldn't alter the classification limits. There's no scope to vary those. You know, you basically had to come up with some kind of correlation, and I, sat here now, don't know how else you could have done that, because --
SIR MARTIN MOORE-BICK: Did you ever -- I'm so sorry.
A. Sorry, go on.
SIR MARTIN MOORE-BICK: You hadn't finished.
A. Yeah, I was just going to say, given that the two regimes are completely different, you know, you're never

going to get 100% correlation. You're just not.
SIR MARTIN MOORE-BICK: You're probably not the person to ask this question anyway, but there was presumably a transition period, wasn't there?
A. Yes, there was. I can't remember -- it was probably about two years, something like that.
SIR MARTIN MOORE-BICK: So you could have decided at the beginning of the transition period just to adopt the European classification system and give industry two years to get their products tested?
A. Yes, I guess we could, but you would have to check exactly what the transition period was.
SIR MARTIN MOORE-BICK: Did that ever come up in discussions that you are aware of?
A. I think, yes, it did come up, and I think it was also complicated by the fact that each of the harmonised product standards had their own transition periods as well. So where you had, you know, product families, they had to follow their own transition periods, which could be up to, I think, 36 months. So every product category was following a different timeline. Their start point was different.
SIR MARTIN MOORE-BICK: All right, thank you.
A. So I think, you know, it's an immensely implicated landscape, really, around all of that.

SIR MARTIN MOORE-BICK: Yes.
MR MILLETT: We're going to come to the transition periods shortly, I think.
Can we go back to the RADAR 2 report at {CLG00000951/6}, please, table 6, top of the page, "Possible Option for Transposition of Classes for Reaction-to-Fire Performance". You can see there's the basic table there, with class 0 showing "B (or better)", and there are three ticks and there's some handwriting there.
Do you know whose handwriting that is?
A. No, I don't.
Q. It's not yours, is it?
A. No, it isn't.
Q. So is it right that, despite the data in table 2 that we've seen with the four products achieving class 0 but only achieving classes C, D and E, and in two cases D, the proposal here was to equate class 0 with Euroclass B?
A. Yes, that appears to be the case.
Q. So you call them outliers; how were those four products treated? Were they ignored, or was an error factor built into the work in order to cater for their presence?
A. Well, it wasn't possible to build in an error factor

because we couldn't alter the classification limit. You got the class that you got when you tested according to the ENs.
Q. Now, you told us that, to your knowledge, there was no investigation of the frequency of use of those four products which had not achieved class B.
A. I don't know. No, I don't know because I don't know what they were. So there may have been with Warrington, but I don't recall that.
Q. Do you know from your own knowledge how those four products were left? How would they be catered for in this harmonisation programme? Would they just be ignored?
A. Yeah, I don't know.
Q. You don't know.
If we go to page 8 {CLG00000951/8}, please, at the top of the page at (c) you see this. Under (c) it says:
"Any reference to Class 0 being equivalent to Euroclass A2 would severely restrict the market choice in terms of materials for specifiers and clients. This applies to virtually all organic containing materials. In Germany and France the authorities have a single classification, i.e. B1 or M1. Thus Euroclass B could be a cross border compromise which is supported by the high product density obtained at the Class 0 [to]

Euroclass B transposition point."
Now, the high product density which is referred to there, is that a reference to the cluster of products that we saw in figure 1 with the table?
A. I would imagine it is.
Q. Right.
Now, when it says here, "Any reference to Class 0 being equivalent to Euroclass A2 would severely restrict the market choice", was there a view that only very few products achieving class 0 would be capable of achieving Euroclass A2?
A. I don't know exactly what the motivation for that comment was, but that is one possible reason for saying that, yes.
Q. And causing a severe restriction of choice at the end of any period of co-existence of two classification methods, was that what was thought might happen if class 0 was required to achieve Euroclass A2?
A. That's what that suggests, yes.
Q. With a potential disruption of the market?
A. Yes.
Q. Does this mean that any reference to class 0 being equivalent to or required to be class A2 would have been likely to have met with resistance from industry?
A. Yes, I believe that is what that would have done.

Q. And if pushed through, caused loss to the UK construction industry?
A. Potentially, yes.
Q. But would it also not mean that if class 0 was made to be equivalent to class A2, that would mean that, at the end of any period of transition, buildings over 18 metres would be clad in materials that performed better in a fire?
A. Yes.
Q. Quite apart from the potential disruption to industry, can you tell us, what were the views of others, in particular the department, Anthony Burd in particular, about safety?
A. I don't know. I mean, you would have to ask him.
Q. From your perspective, doing the best you can to recall, was the balancing exercise being conducted by government, so far as you could see it being conducted, between, on the one hand, the need to avoid the risk of market distortion and, on the other, the need to ensure that fire safety standards were maintained?
A. I think that's fair, that there was a —— yes, there was a compromise.
Q. There was a compromise? Was that discussed during any of the meetings of this working party that you attended?
A. I don't recall.

Q. Do you know how government went about achieving that compromise or balancing public safety as against industry choice?
A. No, I don't.
Q. If we go back to the meeting note, please, of 10 May 2001 at {CLG00007308}. Let's go back to the first page and look at paragraph 1.3. We looked at this before. You told us that you were the expert there on fire testing and European harmonisation.
What, at the time, was your expertise in respect of European harmonisation?
A. So I think I had been at that point in attendance at some of the European discussions of the official laboratories group, as it was called, which was working in the years up to 2000—and —— around 2000, 2001, on the development of the single burning item test and the classification limits associated with those tests, and that was all directed by the European standing committee on construction, who then had their own sub—group, which was the fire regulators group. So they, in effect, controlled and directed the work of the official laboratories group in developing the new —— it was mainly the single burning item test, because the other like reaction to fire tests were already published as ISO standards. So they were picked up and adopted and

then re—published as European norms as well.
Q. If we go to page 2 of this document {CLG00007308/2}, please, next, and paragraph 3.3, we can see that Anthony Burd outlined the main aim of the CPD, he says, which was:
"... to break down technical barriers to trade between Member States of the EU. It is not the purpose of the Directive to harmonise Building Regulations."
Then he goes on to say in the fourth line there:
"What the CPD will do is harmonise methods of fire testing, i.e. reaction to fire and fire resistance. The CPD will have a huge impact; it will affect how products are tested, labelled and moved around Europe, and manufacturers are beginning to realise this."
Would you agree that the extent of the impact on manufacturers in practical terms would depend to a large extent on decisions made by the department, in particular about transposition and equivalence between the two systems?
A. Yes, and, I mean, I think what he's referring to here is that by following the new testing regime, reaction to fire and fire resistance, those products that have been tested and classified according to the ENs would then be able to move freely throughout Europe. They would not then have to test in each country that they were sold

into. So I think that's really what he's saying there in that last sentence.
Q. That's a positive thing, but was there also not a negative thing, that manufacturers are beginning to realise that their products needed to be tested under the —— or at least tested as an equivalent under the CPD, otherwise they couldn't move their products ——
A. That's absolutely right, yes. They would have to have the new European norms and the classification to benefit from that, yes.
Q. And this would depend on decisions made by the department about transposition, equivalence and the transition period, presumably?
A. Well, the department had to do it.
Q. Did you advise on the transition period?
A. No, no, because that was all set out in the European legislation, as I understood it.
Q. Let's scroll down in the minutes, then, to page 7 {CLG00007308/7} and look at paragraph 5.8. You are recorded there as saying this:
"Debbie Smith went on to point out that a direct equivalence between UK classes and Euroclasses was not possible. Problems arise as RADAR 2 is based on a small data set and certain products, such as aluminium foil faced insulation products, are problematic. Concern was

also expressed that that in the RADAR 2 proposal the UK Class 2 had been equated with Euroclass C, together with UK Class 1. This could be seen as lowering standards. Dr Smith reassured the Members that in the draft European Supplement they had not done this (UK Class 2 is equated more readily to Euroclass D). Members agreed that we must not be seen to be lowering standards."

Do you remember, what was the basis for your view that direct equivalence between the two systems of classification was not possible?

A. It was based on the fact that the test methodologies are completely different.

Q. Yes, as we've discussed.

A. Yes.

Q. And what was meant by "direct equivalence"? As opposed to what?

A. That they're not measuring the same properties.

Q. What sort of equivalence would, in your view at the time, have been possible?

A. If you'd got two test methodologies that were both based on heat release rate, for example, then you might have been able to have demonstrated an equivalence, but they weren't.

Q. By whom was it agreed at the meeting, as is said, that we must not be seen to be lowering standards?

A. I don't recall.

Q. Was any consideration actually given to, whatever the importance of perception might have been, standards were actually being lowered by the method of transposition you were considering?

A. I don't know. I don't recall that.

Q. Did anybody ——

A. I mean, if anybody had objected, I think it would have been recorded, probably, so this suggests that nobody raised any concerns.

Q. Now, do you remember that your own recommendation was that national class 0 should be scrapped and replaced with Euroclass C? Do you remember that?

A. B. With Euroclass B.

Q. Well, let's see how we go on this.

Can we go to page 9, please, of this document {CLG00007308/9} and look at paragraph 6.8.

At 6.8, it says:

"Requirement B4 – External Fire Spread, is to remain unchanged. Dr Smith explained that the current Diagram 40 in ADB(2000), on the restricted use of materials based on BS 476 Part 6 performance, can no longer be used and we must agree what to put in its place. Dr Smith suggested replacing the performance requirement 'index (I) not more than 20' with 'Class C'.

On roofs no guidance is yet possible ..."

Then in the last line:

"Therefore, for the time being, the current national test methods and classification systems are to prevail."

Were you proposing that class 0 be replaced by class C in diagram 40?

A. I don't understand the context of this, reading this now. I don't know why it would be said it can no longer be used in 2000.

I'm sorry, I don't recall the context of this. This doesn't make much sense, reading this now.

Q. Well, I was wondering. I was wondering whether you could help with it.

Now, let me ask you this: was this possibly a reference to the part of the building in diagram 40 that dealt with the exterior below 18 metres?

A. I mean, it may have been, but, as I say, I don't know why we would be talking about BS 476 can no longer be used.

Q. It certainly looks from this that you were recommending that class 0 be scrapped, because class 0 depends on passing part 6 as well as part 7.

A. Yes. I mean, I wouldn't like to read too much into this because, as I say, I can't understand the context of this as I read it now.

Q. Let me see if I can help, because I don't want there to be confusion about this. I think you may need to see the then extant diagram 40. This is, of course, May 2001.

If we go, please, to {CLG10000012}. That's Approved Document B, 2000 edition. If we go to page 90 {CLG10000012/90}, you can see that there is diagram 40.

I'm going to assume, Dr Smith, that this was diagram 40 under discussion in May 2001 at this meeting.

A. Yes, I guess it would have been, yes.

Q. Now, we can see class 0 there for the dark shaded part of the building.

A. Yes.

Q. But then we see under the medium–shaded building in the box on the right–hand side, "Index (I) not more than 20". That relates to the part of the building under 18 metres, doesn't it?

A. Yes, it does.

Q. Can you help us, therefore, going back to the minutes that we were looking at {CLG00007308/9}, what you're referring to?

A. No, I still don't understand why it's saying that that can't be used and we have to decide what we have to replace it with.

Q. Right. So you can't help?

A. No.
Q. Was it your view that class 0 should be scrapped and replaced immediately, or at the end, at least, of a period of transition?
A. Well, it was my understanding that that is indeed what would happen.
Q. Right. And at the time of this meeting, it was envisaged, was it, that there would be a period of transition? Do you know whether it had been decided?
A. I don't know at that meeting -- at the time of that meeting whether it had been, but, yes, there would have been a transition period, yes.
Q. Can you remember how long that transition period was to be at that time?
A. I don't remember exactly. I mean, I do recollect various time periods being spoken about, two years, but then, as I say, in the context of the harmonised standards, that then became 36 months. So, you know, things were quite complicated and often interfered with by decisions that were taken, you know, by the European Commission as well.
Q. Now, going back to this question of replacement with class C, it is right, I think, isn't it, that replacing class 0 with A2 would have been the most restrictive and caused the most disruption to industry, but

a replacement with class C would have been significantly less restrictive and less burdensome to industry, wouldn't it?
A. What, instead of class 0, you mean?
Q. Yes.
A. Yes.
Q. Do you know whether there was a response to your suggestion as recorded here?
A. No, I don't.
Q. Did people agree or disagree, do you remember?
A. If it's not recorded in the minutes, I don't know, I don't have any detailed recollection.
Q. Can we then go back to the minute at page 11 {CLG00007308/11}, paragraph 6.20. It says there:
"On p. 15 an amended Diagram 40 needs to be produced and Anthony Ferguson questioned the last line of the final para which states that 'index (I) not more than 20' should be replaced by 'Class C'. Debbie Smith could not recall exactly where the figure came from and remarked that there was a general lack of data."
As I say, that appears to be a discussion about the content of the draft European supplement to the approved document; is that right?
A. Yes, it probably is, because it says, "On [page] 15".
Q. Exactly.

Do you know why that section needed to be amended to read class C? Do you think your proposal had been accepted at this stage?
A. No, I don't know.
Q. And you can't help about any of this?
A. No, I can't.
Q. Did you undertake any investigations that you undertook to investigate, where it says "Action: BRE to investigate this information"?
A. I'm sure we would have done at the time.
Q. Do you know what those investigations involved or revealed?
A. No, I don't.
Q. Going back to the idea of equivalence and your own view that a direct equivalence between the two systems was not possible, as we've seen and as you've confirmed today, if you look at paragraph 5.8, if you go back to that, please, in this document, page 7 {CLG00007308/7}, you can see that you say there, in the third and fourth lines:
"... certain products, such as aluminium foil faced insulation products, are problematic."
Yes?
A. Mm-hm.
Q. Let's just focus on that.

Let's look back, please, at the RADAR 2 report at {CLG00000951/9}, paragraph 4.5, "Cellular Plastic Sector".
Look together with me at (a). In (a) it says this:
"In the short report in Part 1 (ref.3) which accompanied the presentation of the data on the comparisons between the Euroclass system and the UK fire assessment procedures, two conclusions were drawn concerning cellular plastics products. These were:
"1. For the product group as a whole, no correlation was obtained between the Euroclass system and the UK system.
"2. For steel and plasterboard faced products, there was a good correlation with the UK Class 0 values corresponding to a Euroclass B."
Just focusing on the first paragraph of that, no correlation for the whole group, were you surprised or concerned by that?
A. Well, I guess that's what gave rise to my comment that you've just shown in the notes, that it was problematic.
Q. Yes.
If we look at the second point, for steel and plasterboard-faced products, it looks from the discussion below it that that wasn't limited to homogeneous products, but did include composite panels

with a cellular plastic core; yes?
A. Yes, that appears to be the case, yes.
Q. They could only achieve class B because of the combustible component; I think that's right, isn't it?
A. Because of the surface that ——
Q. You say because of the surface; in fact, isn't it because of the combustible component?
A. I think we're probably talking at cross—purposes. They achieved class 0 because of the steel face or the plasterboard face.
Q. Indeed.
A. Yes.
Q. But they can only achieve class B because of the combustible component. They couldn't achieve A2 or A1.
A. Oh, correct, yes. Sorry, we're talking —— yes, I understand now.
Q. Yes. But whether they achieved class B or not wouldn't depend on the fire performance of the facing product, would it?
A. Well, obviously, the performance is dependent upon the whole product that's submitted to the test.
Q. In the Euro tests?
A. Yes.
Q. Did you assume that all facing material would behave the same?

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A. Did I assume?
Q. Yes.
A. No.
Q. The reason I ask is steel and plasterboard is not the same as aluminium, is it?
A. No.
Q. Because aluminium might deform and fall off. Yes.
If you look at (b):
"Products 4/05 and 4/12, which also give Class 0 on the UK system give respectively Euroclasses C and D in the European assessment. Both of these products have relatively thin aluminium foil faced flexible foam laminates respectively based on polyisocyanurate and phenolic foam. With these products it was observed that in the SBI test, the aluminium foil facing was penetrated such that the underlying foam was then available to contribute to the rate of heat release calculation whereas in the US BS 476:Part 6, the heat release found in that test was not sufficient to displace the classification away from the UK class 0. Clearly, the introduction of a simple replacement of the UK Class 0 by a Euroclass B requirement in any regulatory procedure would discriminate against products 4/05 and 4/12 against the practical experience of their acceptability in the UK market for Class 0

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applications."
I just want to understand that. Just simplifying it, is this right: Warrington had concluded that some cellular plastic products, composite products, achieved class 0 but not class B, is this right, because the heat release rate satisfied part 6, but didn't meet the FIGRA levels required in the SBI test to meet class B, but only classes C or D?
A. In principle, yes, that's a reasonable summary.
Q. But requiring those products now to meet class B would effectively limit their market and discriminate against them?
A. Yes, that's what that's saying.
Q. Had you previously been aware that although several of the products which achieved class 0 in the UK national classification system achieved class B in the Euro system, foil —faced polyisocyanurate and phenolic foam insulation products got class 0, but only D and C respectively in the Euro system?
A. Not prior to this.
Q. Right. Were you surprised by that result?
A. Surprised? Well, it was a data point, so I don't think I was surprised or not surprised.
Q. It was significant, though, wasn't it?
A. Yes, but I suppose in a way not surprising.

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Q. Right.
A. Because the fire exposure in the single burning item test is sufficiently —— is harsher, in the sense that you have flames directly impinging upon the surface of the product that's being tested.
Q. Not surprising to you. From what you could tell, did Anthony Burd understand that? Did the government understand?
A. Yes, I believe so. I think Anthony was present during these discussions, yes.
Q. Now, focusing on the final sentence that I've read out to you, I'll read it again —— in fact, we want the last two sentences there, I think, focusing on the penultimate sentence:
"... not sufficient to displace the classification away from the UK class 0."
Then it goes on:
"Clearly, the introduction of a simple replacement of the UK Class 0 by a Euroclass B requirement in any regulatory procedure would discriminate against products 4/05 and 4/12 against the practical experience of their acceptability in the UK market for Class 0 applications."
What did you understand the report to mean by the words "discriminate against" there?

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A. It would mean that those products, if we went with the transposition of where the requirements are class 0, you require Euroclass B, it would mean that products that had previously been class 0 and had been used in a range of applications could no longer be used.
Q. Did you consider that it was important to avoid discriminating against foil-faced PIR and PF, phenolic foam, polymer foam insulation products, regardless of their comparatively poor reaction to fire performance when assessed under the Euroclass system?
A. No, and within the context of, you know, the internal linings, et cetera, then, as I say, the equivalence is class 0 and class B.
Q. What was the problem with discriminating against products that when tested under the Euroclass system performed inadequately?
A. Sorry, could you please repeat that?
Q. What was the problem with discriminating against products which when tested under the Euroclass regime performed inadequately?
A. From my perspective, there wasn't one.
Q. No. Can you tell us about whether there was one from the government's perspective?
A. That is where -- well, obviously, they will need to speak for themselves but, yes, I mean, the premise of

the introduction of the construction products directive and the framework that they set out and was required within Europe was to remove barriers of trade, not to necessarily remove products from the market.
Q. From your knowledge, was the rationale in that last sentence there, namely the potential for discrimination against those two products, a factor in the continued retention of the national classes, in particular national class 0?
A. I don't know.
Q. Was there any discussion about whether it might be beneficial to fire safety to restrict the use of those products on the basis that, although they achieved class 0, they didn't achieve class B?
A. Not within that context, I don't believe, only insofar as there was a progression towards the adoption of the European classifications, and, you know, with the expectation that the national classes would disappear.
MR MILLETT: Mr Chairman, it's 4.30. We are deep into this topic but --
SIR MARTIN MOORE-BICK: But we're not going to finish it this evening?
MR MILLETT: -- somewhere about halfway across the pond on it. We're not going to finish it this evening.
SIR MARTIN MOORE-BICK: All right. Well, at the risk -- ah,

the document has gone from the screen. Do you think we could have the document back up, please? {CLG00000951}.
At the risk of trespassing on your questioning for tomorrow, I wonder if you can help me with this: do you see the sentence in subparagraph (b) which has been underlined in manuscript?
A. Yes.
SIR MARTIN MOORE-BICK: Which refers to the practical experience of their acceptability in the UK market for class 0 applications. Do you recall any discussion about what practical experience is being referred to?
A. No, I'm sorry, I don't. I mean, that may well have come -- oh, this is a Warrington report. No, I mean, it would have been based on Warrington's understanding and knowledge.
SIR MARTIN MOORE-BICK: I ask the question because I'm a little uncertain what practical experience one would get unless there was a fire.
A. Yes, I'm sorry, I don't know.
SIR MARTIN MOORE-BICK: All right. Thank you.
Well, if you do have any further thoughts, you can follow it up tomorrow, Mr Millett.
MR MILLETT: Thank you, Mr Chairman. No, thank you, I think that's --
SIR MARTIN MOORE-BICK: I think it's time we stopped for the

day, Dr Smith, so we'll break there. We'll resume, please, at 10 o'clock tomorrow, and, as I said before many times, please don't talk to anyone about your evidence or anything relating to it over the break. All right?
THE WITNESS: Yes.
SIR MARTIN MOORE-BICK: Thank you very much. See you tomorrow morning.
THE WITNESS: Thank you.
(Pause)
SIR MARTIN MOORE-BICK: Before we rise, can I just say thank you to our stand-in stenographer and document manager, who have performed in an exemplary manner today. Thank you both very much.
MR MILLETT: Yes, thank you very much.
SIR MARTIN MOORE-BICK: Thank you, Mr Millett.
Well, 10 o'clock tomorrow then, please.
MR MILLETT: Thank you very much, Mr Chairman.
(4.32 pm)
(The hearing adjourned until 10.00 am on Tuesday, 22 February 2022)

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