

# OPUS 2

## INTERNATIONAL

Grenfell Tower Inquiry

Day 61

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1 Wednesday, 28 October 2020  
 2 (10.00 am)  
 3 SIR MARTIN MOORE-BICK: Good morning, everyone. Welcome to  
 4 today's hearing. Today we're going to hear from another  
 5 one of the expert witnesses instructed by the Inquiry.  
 6 Yes, Ms Grange.  
 7 MS GRANGE: Yes. Could we have Dr Barbara Lane, please.  
 8 DR BARBARA LANE (sworn)  
 9 SIR MARTIN MOORE-BICK: Thank you very much, Dr Lane, and  
 10 good morning. Sit down and make yourself comfortable.  
 11 THE WITNESS: Yes. Thank you.  
 12 SIR MARTIN MOORE-BICK: Good.  
 13 Yes, Ms Grange.  
 14 Questions from COUNSEL TO THE INQUIRY  
 15 MS GRANGE: Good morning, Dr Lane. Thank you very much for  
 16 returning to the Inquiry to assist us with our work,  
 17 it's very much appreciated.  
 18 I'm going to be asking you questions today about  
 19 your fire safety engineering report, which was prepared  
 20 for Module 1 of Phase 2 of this Inquiry. Ms Grogan will  
 21 then be asking you questions at some point tomorrow  
 22 about your CDM, construction design and management,  
 23 report, and your report into compliance with  
 24 regulation 38 of the Building Regulations 2010.  
 25 A. Okay.

1

1 Q. If you don't understand any of my questions, please ask  
 2 me to repeat the question or put the point in  
 3 a different way to you, and if you can keep your voice  
 4 up at all times, because there is a lady transcribing to  
 5 your right, who is trying to take a very clear note of  
 6 everything we're saying.  
 7 A. Okay.  
 8 Q. On your fire engineering report, you have provided to  
 9 the Inquiry a report entitled "The fire safety  
 10 engineer - Main Report". That was initially dated  
 11 30 October 2019. The reference for that is  
 12 {BLARP0000003}, and there was an appendix to that report  
 13 as well.  
 14 You then prepared an updated report, version 2,  
 15 dated 15 May 2020. The reference for that is  
 16 {BLARP20000010}.  
 17 Then you have very recently provided us with  
 18 a further updated report dated 22 October 2020, and the  
 19 reference for that is {BLARP0000017}, if we could just  
 20 bring that up.  
 21 A. Yes, that's correct.  
 22 Q. That's your latest report.  
 23 A. Yes, it is.  
 24 Q. That has an appendix to it, which is at {BLARP20000018},  
 25 if we just bring that appendix up as well, thank you.

2

1 That's appendix A.  
 2 You have also helpfully produced a corrections and  
 3 addenda document, which sets out exactly what those  
 4 changes are as between the May and the October reports.  
 5 A. That's correct.  
 6 Q. For the transcript, that's {BLARP20000014}.  
 7 Can you just confirm that, in that latest version of  
 8 your report, none of the conclusions in your report have  
 9 changed as between the May and the October versions?  
 10 A. No, they have not.  
 11 Q. Thank you.  
 12 Now, unless I specify otherwise, when I refer to  
 13 your report, I'm going to be referring to that  
 14 3 October 2020 version.  
 15 A. Okay.  
 16 Q. I think you have a hard copy of that --  
 17 A. Yes.  
 18 Q. -- in front of you on the desk, which is paginated --  
 19 A. Yes.  
 20 Q. -- if at any stage you want to look at the hard copy,  
 21 but we will also bring up any relevant sections on the  
 22 screen.  
 23 A. Okay, thank you.  
 24 Q. That report focuses on the adequacy of the advice  
 25 provided by the fire safety engineer, Exova

3

1 Warringtonfire, during the primary refurbishment.  
 2 If we can bring up that report again,  
 3 {BLARP20000017/344}, here we can see an expert's  
 4 declaration that you have prepared, and we can see  
 5 a statement of truth at page 345 {BLARP20000017/345}.  
 6 We have that there.  
 7 Is that your signature there at the bottom?  
 8 A. Yes, it is.  
 9 Q. Thank you.  
 10 Now, any matters of law within your reports will be  
 11 a matter for the Chairman and the panel to decide, but  
 12 can you confirm to us that the factual matters set out  
 13 in your report are true to the best of your knowledge  
 14 and belief?  
 15 A. Yes.  
 16 Q. Can you confirm that your report accurately sets out  
 17 your true and complete professional opinion on the  
 18 matters addressed within it?  
 19 A. Yes, it does.  
 20 Q. Thank you.  
 21 Now I'm going to ask you just a few questions about  
 22 your background and experience.  
 23 A. Okay.  
 24 Q. Now, we did call you in Phase 1 of the Inquiry, so I've  
 25 already covered some of this, but just for everybody's

4

1 benefit, I want to pick up some key points. You have  
2 helpfully provided an updated CV for us. If we can find  
3 that and bring that up, that's {BLARP20000015/4}. So  
4 this is the recent CV that you have provided to us; is  
5 that correct?

6 A. That's correct.

7 Q. Thank you.

8 Is it right that you are a director of Arup, which  
9 is an independent company of designers, planners,  
10 engineers, consultants and technical specialists,  
11 addressing professional services in the built  
12 environment?

13 A. Yes, I am.

14 Q. What post do you currently hold in Arup?

15 A. At this time I have multiple roles at Arup. So I sit on  
16 the UKIMEA board. In that capacity, I'm responsible for  
17 Arup University, which is our learning, knowledge and  
18 skills function. I also have a safety role in that  
19 regard for our staff and premises.

20 I'm also an operational group leader, so I run  
21 a business, one of the businesses in Arup, which is  
22 a group of about 250 technical specialists, one team of  
23 which is Arup Fire, and I'm also what's called a fellow  
24 of Arup, because of my technical experience.

25 Q. Yes, thank you.

5

1 You specialise in fire safety engineering in the  
2 built environment, and you have over 20 years'  
3 experience in the construction industry in England and  
4 internationally; is that correct?

5 A. Yes, that's correct.

6 Q. You are a chartered engineer and, having recently moved  
7 to Ireland, is it right that this is with the Institute  
8 of Engineers in Ireland?

9 A. That's correct.

10 Q. You graduated from Trinity College Dublin with a degree  
11 in civil engineering?

12 A. Yes, I did.

13 Q. As you say, you are a fellow of Arup, and is that  
14 an honorary title awarded to exceptional individuals  
15 within the firm?

16 A. Yes, it is.

17 Q. You are also a fellow of the Royal Academy of  
18 Engineering and the Royal Society of Edinburgh?

19 A. Yes, I am.

20 Q. Is it right that you have extensive experience as a fire  
21 engineer in drafting fire safety strategies?

22 A. Yes, I have extensive experience.

23 Q. Do you have experience of doing that for existing  
24 buildings, refurbishments and new-build projects?

25 A. Yes, I do.

6

1 Q. In fact, if we look at page 6 {BLARP20000015/6} of this  
2 CV document here, I think what we see is a list of  
3 existing building fire strategies --

4 A. Yes.

5 Q. -- that you have given here. We can see that you have  
6 experience of drafting such strategies for high-rise  
7 buildings; is that correct?

8 A. Yes, I just gave a few project examples.

9 Q. Yes.

10 A. Yes.

11 Q. Thank you.

12 Then we can see on page 7 {BLARP20000015/7} your  
13 experience of drafting fire strategies and other  
14 fire safety compliance activities --

15 A. Yes.

16 Q. -- on other projects, including high-rise residential  
17 buildings, including, for example, Elizabeth House in  
18 London, and Project Neptune, a campus in Scotland. Is  
19 that correct?

20 A. Yes, that's correct.

21 Q. Were any of those projects involving overcladding of  
22 buildings over 18 metres?

23 A. Elizabeth House, yes, it involved overcladding.

24 Q. Yes.

25 A. And my involvement was to do with its proximity to other

7

1 buildings, in that context of cladding.

2 Q. Yes, yes.

3 A. And on Project Neptune, it was not overcladding, it was  
4 problems with cladding.

5 Q. Yes. Thank you.

6 Can you also help as to whether you have experience  
7 acting as a fire engineer in design and build projects?

8 A. Yes, I do, and I wanted to just set out those numbers in  
9 my CV. So I'm registered on the Arup system as having  
10 worked on over 480 projects in the last 23 years.

11 Q. Yes.

12 A. 96 of them were what's classified as design and build  
13 projects. 62 of those, my client was the principal  
14 contractor.

15 Q. Thank you, that's very helpful.

16 Moving on, I want to ask you some questions about  
17 fire safety engineering and fire strategies.

18 In the first substantive section of your report at  
19 section 2, you have helpfully explained the definitions  
20 of certain key terms and concepts relevant to the role  
21 of a fire safety engineer. I want to start by just  
22 looking at the definition of a fire engineer. If we go  
23 to page 13 {BLARP20000017/13} in your report, we can see  
24 there that you have given us, at 2.2.1:

25 "... the Institution of Fire Engineers ... defines

8

1 a Fire Engineer as follows:  
 2 "Through education, training and experience, a Fire  
 3 Engineer understands ..."  
 4 Then we have a list of things there that a fire  
 5 engineer will understand, including the nature,  
 6 characteristics and mechanisms of fire, the spread and  
 7 control of fire, and then if we look to the penultimate  
 8 bullet point:  
 9 "the likely behaviour of materials, structures,  
 10 machines, apparatus, and processes as related to the  
 11 protection of life, property and the environment from  
 12 fire;  
 13 "the interaction and integration of fire safety  
 14 systems and all other systems in buildings ..."  
 15 So there we have that definition.  
 16 Now, in terms of the Institute of Fire Engineers, is  
 17 it right that they are a registered charity who assess  
 18 the knowledge of fire and professional experience, and  
 19 they award internationally recognised membership grades  
 20 and fire-related qualifications?  
 21 A. Yes, that's my understanding.  
 22 Q. Is it also right that, through its Engineering Council  
 23 licence, as a professional engineering institution, the  
 24 IFE registered suitably qualified IFE members as  
 25 chartered engineers? Is that correct?

9

1 A. Yes, that's correct.  
 2 Q. Now, all those areas there, I take it that those are all  
 3 areas you would expect a reasonably competent fire  
 4 engineer to have an understanding of?  
 5 A. As a minimum.  
 6 Q. Yes. I understand.  
 7 A. Yes.  
 8 Q. Now, I'm going to ask you a little bit later about  
 9 competence requirements for fire engineers, but for now  
 10 I just wanted to get a sense for what the key areas of  
 11 knowledge were.  
 12 A. Okay.  
 13 Q. In terms of the definition of fire engineering, if we  
 14 can go on page 17 {BLARP20000017/17} of your report to  
 15 paragraph 2.6.1, there we've got the Institute of Fire  
 16 Engineers definition, and it says there:  
 17 "Fire Engineering is the application of scientific  
 18 and engineering principles, rules [codes], and expert  
 19 judgment, based on an understanding of the phenomena and  
 20 effects of fire and of the reaction and behaviour of  
 21 people to fire, to protect people, property and the  
 22 environment from the destructive effects of fire."  
 23 You see that there?  
 24 A. Yes.  
 25 Q. We can see also the definition of fire safety

10

1 engineering at paragraph 2.7.1 on page 18  
 2 {BLARP20000017/18} of your report.  
 3 A. Yes.  
 4 Q. This is from the British Standard published document  
 5 7974-0:2002.  
 6 Is it right that the published document series were  
 7 a series of documents published by the British Standards  
 8 Institute to provide additional guidance in support of  
 9 separate British Standards?  
 10 A. Yes, that's correct.  
 11 Q. There we get the definition of fire safety engineering  
 12 from that published document is the "application of  
 13 scientific and engineering principles to the protection  
 14 of people, property and the environment from fire".  
 15 Then I want to ask you just a little bit about  
 16 fire safety methodologies.  
 17 A. Yes.  
 18 Q. You then go on and explain in section 2.8 of your report  
 19 that there are different fire safety engineering  
 20 methodologies that can be employed.  
 21 A. Yes.  
 22 Q. You highlight a distinction, if we can go on page 19  
 23 {BLARP20000017/19} and look at that page. So in  
 24 particular at 2.8.2 and 2.8.3 on that page, you're  
 25 highlighting a difference between prescriptive-based

11

1 design --  
 2 A. Yes.  
 3 Q. -- and, by comparison, performance-based design. That's  
 4 a distinction you're drawing, isn't it?  
 5 A. Yes.  
 6 Q. At 2.8.2 you say:  
 7 "... Prescriptive Based Design, relies on the  
 8 prescribed performances, requirements, recommendations,  
 9 or detailing, etc as exactly set out in a design code or  
 10 standard."  
 11 So you follow a prescriptive code.  
 12 A. Exactly, you --  
 13 Q. Whereas:  
 14 "By comparison, Performance Based Design methods,  
 15 are deemed to be an alternative approach, and these are  
 16 also assumed to be derived on a first principles basis."  
 17 A. Yes.  
 18 Q. You then give us a helpful example at the bottom of  
 19 page 19, on that same page, if we can look at that. So  
 20 you illustrate the difference there, and you say:  
 21 "... the layout of a building floor with respect to  
 22 the position of fire escape stair cores could be  
 23 designed on the following basis ..."  
 24 You say on the prescriptive design side you could  
 25 apply the rules on maximum travel distances, minimum

12

1 stair widths, as shown in the Statutory Guidance for  
 2 that purpose group. That would be a prescriptive  
 3 design; is that right?  
 4 A. Prescriptive method, yes.  
 5 Q. Then you contrast that in (b) with a performance-based  
 6 design, which would be:  
 7 "Setting maximum exposure criteria for the desired  
 8 number of occupants, in terms of smoke inhalation,  
 9 visibility and temperature exposure; then quantifying  
 10 how occupants in the building can be protected from  
 11 those conditions in any reasonable design basis ...  
 12 formulating a number and width of required staircases  
 13 for the relevant evacuation methods."  
 14 A. Yes.  
 15 Q. So that's your helpful definition of performance-based  
 16 design.  
 17 A. Yes, so trying to show the difference between the two  
 18 methods.  
 19 Q. Yes, that's very helpful.  
 20 Now, you explain in section 2.11 of your report on  
 21 page 23 {BLARP20000017/23} that it's also possible to  
 22 carry out fire engineering analysis, and you tell us  
 23 that:  
 24 "This term commonly refers to the use of advanced  
 25 computational tools to quantify the performance of fire

13

1 and smoke as part of a building design process, and the  
 2 resulting consequences on people and structures."  
 3 And you give a number of examples there.  
 4 A. Yes.  
 5 Q. So computational fluid dynamics, finite element  
 6 modelling and simulation software, and you tell us that  
 7 methodologies to undertake those analyses are defined in  
 8 the British Standard that you give there in 2.11.2 --  
 9 A. Yes, that's correct.  
 10 Q. -- and you give some examples.  
 11 Now, with all of that in mind, at 2.10 of your  
 12 report {BLARP20000017/21} you then deal with the  
 13 definition of a fire safety strategy.  
 14 A. Yes.  
 15 Q. You have explained a number of things about that, and  
 16 I'll take you to some of the paragraphs in your report,  
 17 but perhaps you can just help us at this stage: can you  
 18 just explain briefly in your own words what a fire  
 19 safety strategy is?  
 20 A. A fire safety strategy is a document, depending on the  
 21 stage of the works it's being produced for, has  
 22 a certain quantity of information in it. I'll just  
 23 focus on the final stage and just give my --  
 24 Q. Yes.  
 25 A. Talk about a detailed fire strategy or the final

14

1 fire strategy.  
 2 Q. Yes.  
 3 A. It would address in England the five parts of the  
 4 Building Regulations.  
 5 Q. Yes.  
 6 A. The fire safety objectives for the project, the  
 7 fire safety goals, how those goals were to be met, and  
 8 all the active and passive systems.  
 9 Q. Yes.  
 10 A. The characteristics of the building, the characteristics  
 11 of the people, and set out -- it's almost -- I say to  
 12 myself it's a narrative, a very detailed narrative, of  
 13 how the building has been created, constructed, and, in  
 14 the event of a fire, exactly what's provided and why.  
 15 Q. Yes.  
 16 A. And it should be clear enough so that the people who are  
 17 impacted by fire, or who are making plans in the event  
 18 of a fire, once the building is occupied, clearly  
 19 understand exactly what's there, why, why they need to  
 20 maintain it, how they need to educate people on what to  
 21 do in the event of a fire, as well as the Fire Brigade  
 22 being able to understand and read --  
 23 Q. Yes.  
 24 A. -- the measures provided for them and why.  
 25 Another important aspect of a fire strategy is being

15

1 clear where there are risks you have not been able to  
 2 mitigate, or you have mitigated them to a certain  
 3 extent.  
 4 Q. Yes.  
 5 A. And that's particularly relevant for existing buildings,  
 6 where you're working in, you know, sometimes very  
 7 constrained conditions, and so you have to be practical  
 8 and pragmatic in terms of what protection measures are  
 9 possible.  
 10 Q. Yes. Thank you, that's very helpful.  
 11 Is it right that there is no statutory definition of  
 12 a fire safety strategy?  
 13 A. Statutory definition? So there is no statutory design  
 14 guide called, "The fire strategy and what should be in  
 15 it", no.  
 16 Q. But is it right that we do see a definition of a fire  
 17 safety strategy within published document 7974:2002? If  
 18 we pull up page 21 of your report {BLARP20000017/21},  
 19 paragraph 2.1.0.1, there we see in that published  
 20 document, in that guidance, it states -- this is with  
 21 reference to paragraph 3.16 of that published  
 22 document -- it defines a fire safety strategy as a:  
 23 "... combination of fire safety measures that has  
 24 been shown by reference to prescriptive codes or a fire  
 25 engineering study to be capable of satisfying the

16

1 specified fire safety objectives."

2 A. Yes.

3 Q. Is that right?

4 A. Yes.

5 Q. So that's a shorter definition.

6 Then if we could look at 2.10.2, in the next  
7 paragraph, we can see that published document also says  
8 at part 9.7:

9 "The fire safety strategy for the building will be  
10 based on the successful trial design and is likely to  
11 comprise a range of physical fire safety measures and  
12 management procedures. A description of these measures  
13 should be provided, together with performance  
14 specifications and any recommended deviations from the  
15 relevant system codes."

16 A. Yes, that's correct.

17 Q. So that chimes with the more detailed description you  
18 have just given.

19 A. I hope so.

20 Q. Just give us some help there, where it talks in the  
21 first line about it would be "based on the successful  
22 trial design" --

23 A. Yes.

24 Q. -- what does that mean there, as you understand it?

25 A. Yes, so when a project starts, there may be some basic

17

1 concepts, for example, in the mind of the architect, or  
2 the client may have some objectives they're trying to  
3 meet, and depending on the circumstances there may be  
4 more than one appropriate solution, and in the very  
5 early stages of the project, I and others would  
6 typically set out maybe one, two or three potential  
7 solutions to a problem.

8 Q. Yes.

9 A. And then when you factor in all the other issues in  
10 design beyond fire safety, and, you know, you  
11 co-ordinate and think about all the other objectives of  
12 the project, one of the potential fire safety solutions  
13 may also enable other objectives on the project.

14 So in those very early stages, it's a real to and  
15 fro between the client or the contractor, the design  
16 team, the fire safety engineer, trying to hone in on  
17 a set of -- you know, a solution that delivers the  
18 multiple objectives for the project.

19 Q. Yes.

20 A. So that's one part of trial design.

21 Now, trial design means other things in different  
22 countries.

23 Q. Right.

24 A. And just to be absolutely clear, for example, in America  
25 you have to set out multiple sizes of fire and analyse

18

1 all different types of failures of systems, and check  
2 that your preferred solution is still fit for purpose.

3 Q. I see.

4 A. So it can mean two things.

5 Q. That's helpful.

6 We note in the third line it talks about it's  
7 "likely to comprise a range of physical safety measures  
8 and management procedures". Again, that's a point you  
9 made earlier, that it's also about how the building is  
10 going to be managed --

11 A. Yes, absolutely.

12 Q. -- that's key in a fire strategy; is that right?

13 A. Absolutely, because when the building's handed over, its  
14 life is just beginning, really, in terms of fire safety,  
15 and the people who are responsible for managing that  
16 building and protecting the people who live and work  
17 there must understand what the fire strategy is for and  
18 what it's trying to achieve.

19 Q. Yes.

20 A. So that connection to the people living and working in  
21 the building, and what the Fire Brigade need to be able  
22 to do in various scenarios, is a fundamental part of the  
23 communication needed in a fire safety strategy document.

24 Q. Just in that final line, it's referring there to any  
25 recommended deviations from the "relevant system codes".

19

1 A. Yes.

2 Q. Can you just give an example of what a system code might  
3 be? Could that be Approved Document B, for example?

4 A. It could be Approved Document B, it could be  
5 a British Standard.

6 Q. Yes.

7 A. So, for example, at Grenfell, when Max Fordham was  
8 trying to work out how to deal with the existing  
9 physical constraints, which is a very valid part of  
10 working out what to do in an existing building,  
11 you know, companies like that, like ours, you work  
12 through those constraints relative to all different  
13 types of British Standards when it comes to that level  
14 of detailing, and you may have to be absolutely clear  
15 with the statutory authorities that certain things  
16 cannot happen in that building because of its physical  
17 nature, and that's what that means.

18 So you're very explicit about what can't happen, and  
19 so why it's a deviation, and what you as a professional  
20 company are recommending or offering as an alternative  
21 mitigation, if a mitigation is needed.

22 Q. Yes, I understand.

23 Can you help us, I've asked you about a statutory  
24 definition of a fire safety strategy; was there any  
25 statutory requirement to have a fire safety strategy for

20

1 a building like Grenfell Tower? Was there any  
 2 requirement that you had to have an existing  
 3 fire strategy, for example?  
 4 A. Do you mean before the refurbishment work?  
 5 Q. Yes.  
 6 A. So I think just -- so there isn't, you know, the  
 7 approved document for a fire strategy for an existing  
 8 building.  
 9 Q. Yes.  
 10 A. But I see that as a bit of an excuse, if I may say, and  
 11 I want to call it an excuse because hopefully in what  
 12 you've just heard in the last few minutes, it's  
 13 essential to have a written narrative about any building  
 14 so the people responsible for that building know what  
 15 they need to do. The fire risk assessor needs to  
 16 understand that narrative too when they are going to do  
 17 their work. The building manager needs to understand  
 18 what to do, people have to make emergency plans.  
 19 There's all sorts of activities that can only be  
 20 accurate and relevant if there is an understanding of  
 21 all the different things in that building: the active  
 22 systems, the passive systems, what's working, what's not  
 23 working.  
 24 Q. Yes.  
 25 A. So whilst I accept, you know, the phrase, "There is no

21

1 statutory requirement", I personally or professionally  
 2 don't understand how one can discharge all the  
 3 fire safety duties one has in an existing building  
 4 without a written record of that building. And so, in  
 5 my opinion, I think you are obliged to have a fire  
 6 safety strategy for an existing building.  
 7 Q. Would the same logic apply to a refurbishment project as  
 8 well, in that is your evidence that there might not be  
 9 a statutory requirement to have a fire safety strategy,  
 10 but it is certainly necessary to have a fire safety  
 11 strategy for any major refurbishment works?  
 12 A. Yes, because you have to understand what you're dealing  
 13 with, okay? You need to understand the baseline in the  
 14 existing building before the works begin, and you see  
 15 that in the evidence -- anyway, I won't talk  
 16 specifically about Grenfell yet, but you have to  
 17 understand the baseline.  
 18 So when you're changing something or removing  
 19 something, you need to understand the consequences of  
 20 that in terms of the overall safety standard in the  
 21 building.  
 22 Q. Yes.  
 23 A. And at Grenfell, the professional design team themselves  
 24 observed that to be the case.  
 25 Q. Is it also right that, in your view, one important

22

1 purpose of a fire safety strategy is to identify the  
 2 fire safety performance requirements on which the  
 3 parties responsible for design can draw and rely?  
 4 A. Sorry, could you just repeat that again, please?  
 5 Q. Yes. Is it right that, in your view, one important  
 6 purpose of a fire safety strategy is to identify the  
 7 fire performance requirements on which those responsible  
 8 for the design can rely?  
 9 A. Oh, sorry. Yes, it is my opinion, yes.  
 10 Q. I think you go so far as to say in your report -- this  
 11 is on page 48 {BLARP20000017/48}, paragraph 3.6.8 --  
 12 that these are the:  
 13 "... founding source of the required performance  
 14 criteria for the Architect's fire drawing information,  
 15 and for other parties responsible for design of fire  
 16 safety systems."  
 17 Do you see that there?  
 18 A. Yes, and that's linked to this issue that there may be  
 19 more than one way to solve a problem.  
 20 Q. Yes.  
 21 A. Okay? So the fire safety engineer, when the toing and  
 22 froing at the early stages of the project, you know, in  
 23 that circle of co-ordination, they have to then be clear  
 24 about the fire safety objectives, so then the design  
 25 team understands very clearly exactly which solution is

23

1 proposed and why, and then they can carry out all their  
 2 very detailed work in the future.  
 3 Q. Yes.  
 4 Now, if we go to paragraph 3.6.2 of your report on  
 5 page 47 {BLARP20000017/47}, now you're dealing with the  
 6 content of a fire strategy report.  
 7 A. Yes.  
 8 Q. You say there:  
 9 "There is currently no formal statutory guidance on  
 10 what exactly a fire strategy report should contain."  
 11 A. Yes.  
 12 Q. Then you have gone on in your report to discuss a number  
 13 of pieces of guidance, including a May 2015 document  
 14 produced by the Fire Industry Association called "Scope  
 15 of Works for the Fire Engineer", or the FIA guide.  
 16 If we can just bring that guide up, it's at  
 17 {INQ00011219}. So there is that fire industry  
 18 association guide. We can see at the bottom of page 2  
 19 that it's dated May 2015, so I think it's right that, at  
 20 the time of Exova's engagement initially on the Grenfell  
 21 project, this wasn't in existence.  
 22 But can you help us, why do you nevertheless review  
 23 Exova's work against this Fire Industry Association  
 24 guidance note?  
 25 A. Because all this guidance does is reflect common

24

1 practice for very many years in the fire safety  
 2 profession.  
 3 Q. So, just to be clear, you consider that what's in this  
 4 guidance is reflective of common industry practice prior  
 5 to May 2015?  
 6 A. Well, industry practice is a different matter, because  
 7 practice can vary, can't it?  
 8 Q. Yes.  
 9 A. It reflects a common appropriate way to conduct oneself  
 10 during the RIBA stages.  
 11 Q. So good industry practice?  
 12 A. Yes, exactly.  
 13 Q. Were there any other equivalent guides or guidance notes  
 14 pre-dating 2015 which helped about what fire safety  
 15 strategies should contain?  
 16 A. I put in that PAS from -- I can't remember the year,  
 17 sorry.  
 18 Q. I'm coming to that in a moment.  
 19 A. Sorry. Were there others? I mean, the 7974 series  
 20 gives some help on ...  
 21 Q. Yes.  
 22 A. But other than that, I'm not particularly aware of any  
 23 other detailed document.  
 24 Q. Yes.  
 25 A. Oh, actually, sorry, the CIBSE guide E on fire safety

25

1 engineering is another one.  
 2 Q. Is it your view that this guide provides an accurate  
 3 statement of what can properly be expected of  
 4 a competent fire engineer fulfilling obligations in 2012  
 5 to 2016?  
 6 A. Oh, yes, I do.  
 7 Q. Is it your evidence that this guide helps explain in  
 8 more detail how an ordinarily competent fire engineer  
 9 would be expected to fill obligations which it was  
 10 undertaking in that time period?  
 11 A. Yes, and that's why it was published, to make that clear  
 12 to the whole profession.  
 13 Q. Just to be clear, this guide is not simply your own  
 14 preferred approach?  
 15 A. Oh, absolutely not, no. I don't want that, the  
 16 "absolutely not", to be taken as a negative. It's not  
 17 a preferred approach; it simply reflects certainly what  
 18 we have done for a very long time, and it's a useful  
 19 reference for other people, you know, other parties, to  
 20 understand that.  
 21 Q. As you say, you have also referred to PAS 911:2007.  
 22 "PAS" stands for "Publicly Available Specification", and  
 23 this one was titled "Fire strategies - guidance and  
 24 frameworks for their formulation", and that was prepared  
 25 by the British Standards Institution.

26

1 If we can just go to that, this is {BSI00000066}.  
 2 So that is another piece of guidance that you have  
 3 referred to.  
 4 A. Yes.  
 5 Q. Can we just have a look at the foreword to this report,  
 6 it's at page 4 {BSI00000066/4}. This is from 2007. So  
 7 we can see it says there in the orange text that it was  
 8 prepared by the British Standards Institution in  
 9 association with Kingfell, a multidisciplinary company.  
 10 In the second sentence it says:  
 11 "It is intended to provide guidance for the  
 12 preparation and/or review of a fire strategy."  
 13 Then it says:  
 14 "[It] does not provide detailed recommendations or  
 15 specifications with respect to the application or  
 16 specification of fire safety and fire protection, as  
 17 this information is normally covered in national codes  
 18 and standards. Instead, it provides the user with one  
 19 methodology to take the national guidance and utilize it  
 20 within a framework; the purpose being to ensure that the  
 21 final strategy follows a consistent style and covers the  
 22 main issues."  
 23 Do you see that there?  
 24 A. Yes.  
 25 Q. Before I ask you more about the contents of this

27

1 document, I just want to ask you about what you said in  
 2 your first version of your report in October 2019 about  
 3 this.  
 4 A. Yes.  
 5 Q. If we go back to that, this is at {BLARP20000003/34}.  
 6 I just want to look at paragraph 3.6.7.  
 7 A. Yes.  
 8 Q. There you say that that document:  
 9 "... has never been amended nor has it been formally  
 10 adopted as a British Standard. I am not aware that it  
 11 is in wide use in the UK construction industry, and  
 12 I have never relied upon it in my own professional work.  
 13 Therefore, I will not refer to it here."  
 14 Then in the second version of your report, if we go  
 15 to {BLARP20000010/30}, and if we look at  
 16 paragraphs 2.22.6 and following, right at the bottom of  
 17 that page, there we can see you tell us it's never been  
 18 amended or formally adopted, and then in the next  
 19 paragraph:  
 20 "I am not aware of this standard having been widely  
 21 referred to by the fire safety profession."  
 22 A. Yes.  
 23 Q. Then you say:  
 24 "However, the guide in PAS 911 relating to the  
 25 development of fire strategies, and in particular fire

28



1 strategies for existing buildings, aligns with my own  
 2 understanding, and professional experience.”  
 3 A. That’s correct, yes.  
 4 Q. We have the same paragraphs in your latest report. Just  
 5 for the transcript, that’s at page 30 {BLARP20000017/30}  
 6 of your latest report.  
 7 Now, reading those two together, do we understand  
 8 from that that, although you yourself have never relied  
 9 on PAS 911 in your own professional work, it does  
 10 in fact align with your own professional understanding  
 11 and experience?  
 12 A. Yes, so it’s not a document I take out and read all the  
 13 time and it’s not a document I refer to when I’m writing  
 14 my own fire safety strategies.  
 15 Q. Yes.  
 16 A. I’m obliged to listen to evidence, as you know, and  
 17 after I listened to the Exova evidence, there was a lot  
 18 of confusion around definitions, and I thought it might  
 19 be better if my own opinion wasn’t simply on its own,  
 20 that the panel had the opportunity to read a published  
 21 guidance document and not just rely on my experience.  
 22 Q. Yes.  
 23 A. And I felt I had to do that when I re-issued my report.  
 24 Q. Yes, and that’s why we see some more references to the  
 25 PAS 911 standard in your later versions of your report?

29

1 A. Yes. Not very many, I would like to say.  
 2 Q. No.  
 3 A. Just one or two additional references.  
 4 Q. At 2.22.8 at the bottom of that page we can see that  
 5 what you are highlighting particularly is that it gives  
 6 some useful guidance for existing building fire  
 7 strategies; is that correct?  
 8 A. Exactly. I think, like all engineers, I probably suffer  
 9 from a difficulty in explaining what I do to other  
 10 people. I think it’s a bit of a common feature. So  
 11 sometimes it’s better to allow people to contemplate it  
 12 being written in a clearer way, and I think the language  
 13 in that document around existing fire strategies, I felt  
 14 it might help.  
 15 Q. Let’s look at some of the extracts you have given us.  
 16 If we go to page 24 {BLARP20000017/24} of your report,  
 17 we can see you have given us an extract here, if we can  
 18 blow that up. So this is an extract from section 7.1.3  
 19 of that document, and it is specifically about, we can  
 20 see from the little title below that, “Fire strategies  
 21 for existing buildings”, and is it right that what this  
 22 does is set out a step-by-step approach --  
 23 A. Yes.  
 24 Q. -- to the preparation of a fire strategy for an existing  
 25 building?

30

1 A. Yes.  
 2 Q. We can see that, for example, at (a) we have a planning  
 3 meeting, (b) research.  
 4 A. Yes.  
 5 Q. So there is a research step; is that right?  
 6 A. Yes.  
 7 Q. “All data, records, documents and relevant codes are  
 8 subjected to detail review.”  
 9 A. Yes.  
 10 Q. And then if we jump two down to (d), we can see it has  
 11 “Site Activities”; is that right?  
 12 A. Yes.  
 13 Q. “For existing buildings this will incorporate audits and  
 14 surveys of the building, occupants, services,  
 15 systems ...”  
 16 Do you see that there?  
 17 A. Yes.  
 18 Q. Now, I’m going to come back, just to be clear, and ask  
 19 you about the site visit that was done to  
 20 Grenfell Tower --  
 21 A. Okay. Okay, yes.  
 22 Q. -- in the context of writing the existing fire safety  
 23 strategy.  
 24 A. Yes.  
 25 Q. But at this stage I just wanted to note that we can see

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1 here site activities is one of the steps.  
 2 A. Yes. May I say something at this point?  
 3 Q. Yes.  
 4 A. So for a fire engineering company, doing an existing  
 5 fire strategy is a much higher risk professional  
 6 activity than a new-build fire strategy, and I think  
 7 I just would like to explain that now before we go on.  
 8 Q. Yes, yes.  
 9 A. Because, you know, you have less control and knowledge  
 10 of what you’re dealing with. If you have a blank piece  
 11 of paper and you’re working with everyone at the time,  
 12 that’s -- let’s call it -- one level of commercial risk.  
 13 But for an existing building strategy, the commercial  
 14 risk is you miss something, you don’t know something,  
 15 you’re not told something. So it’s a very different  
 16 type of professional activity, and I would like to be  
 17 able to refer back to that point again later on, please.  
 18 Q. Yes, of course.  
 19 A. Yes.  
 20 Q. What we can see from this outline in PAS 911 is that  
 21 there are then several layers of review.  
 22 A. Yes.  
 23 Q. We can see at (e) a first review, then we get an outline  
 24 draft strategy at (f), a second review, a final draft  
 25 strategy, so that is envisaging a number of iterations

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1 of the report; is that correct?  
 2 A. Yes, if it's needed as a function of when you're  
 3 receiving information and the level of information you  
 4 receive.  
 5 Q. Yes.  
 6 A. Yes.  
 7 Q. Then even after that final draft strategy, we've got the  
 8 third review --  
 9 A. Yes.  
 10 Q. -- involving meetings with stakeholders --  
 11 A. Yes.  
 12 Q. -- any final issues that need to be corrected, and then,  
 13 (j) issue the strategy.  
 14 A. Exactly.  
 15 Q. So that's a helpful guide --  
 16 A. Yes.  
 17 Q. -- from this published document about what's envisaged  
 18 for existing fire strategies.  
 19 A. Yes.  
 20 Q. Thank you.  
 21 Then if we can look at page 25 {BLARP20000017/25},  
 22 the next page of your report, we can see there that you  
 23 have extracted for us a process chart for existing  
 24 buildings, and really what that does, I think, is just  
 25 put into diagrammatical form what we saw in the earlier

33

1 table; is that right?  
 2 A. Yes.  
 3 Q. Or the earlier text.  
 4 A. Yes.  
 5 Q. So we can see those steps there.  
 6 Then if we look at page 22 {BLARP20000017/22} your  
 7 report, you have also exhibited another figure from the  
 8 PAS 911 document, if we can blow that up. This is  
 9 called "The design basis".  
 10 Is it right that what this does is it shows seven  
 11 forms of input into a fire strategy, those are the boxes  
 12 at the top?  
 13 A. Yes.  
 14 Q. Then they feed down into the fire strategy.  
 15 A. Yes.  
 16 Q. And then you have got various components of that  
 17 fire strategy, and then it's broken down again in terms  
 18 of the specification arrangement and design of certain  
 19 things.  
 20 A. Yes.  
 21 Q. And also policies and procedures.  
 22 A. Yes.  
 23 Q. And we can see that there needs to be reference to  
 24 policies and procedures for managing fire safety  
 25 responsibilities and authorities, et cetera.

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1 So this is, as I understand it, just what all the  
 2 different inputs are into a fire safety; is that right?  
 3 A. Yes, it's almost like different layers of consideration.  
 4 Q. Yes.  
 5 A. And I put this in because, again, there was confusion  
 6 regarding the statutory fire risk assessment, as opposed  
 7 to assessing risk in one's work as a fire safety  
 8 engineer, and I thought that this design basis explained  
 9 the role of risk assessment in fire safety engineering  
 10 work.  
 11 Q. Yes.  
 12 A. And it's such, you know, a major component of our work  
 13 when we're honing in on a solution.  
 14 Q. Yes, yes.  
 15 Now, that very topic I want to come to now --  
 16 A. Okay.  
 17 Q. -- which is the interaction between a fire safety  
 18 strategy and a fire risk assessment.  
 19 A. Okay.  
 20 Q. Now, one of the matters you discuss in some detail in  
 21 your report is that interrelationship between those two  
 22 things.  
 23 A. Yes.  
 24 Q. Just by way of background, is it right that the  
 25 Regulatory Reform (Fire Safety) Order 2005 -- and this

35

1 is at paragraph 9.1 -- requires a suitable and  
 2 sufficient assessment of risks to which relevant persons  
 3 are exposed to be carried out by the responsible person?  
 4 Now, that's a short form of that duty.  
 5 A. Understood. That is correct.  
 6 Q. That fire risk assessment is expected to include the  
 7 information of fire hazards; is that right?  
 8 A. Yes.  
 9 Q. And the evaluation of the risk and the fire precautions  
 10 designed to reduce risk?  
 11 A. Yes.  
 12 Q. What your report does -- and I'm not going to have time  
 13 to take you to all of the passages in your report, but  
 14 over a number of different passages across your report,  
 15 you have emphasised the important interaction that there  
 16 should be between a fire safety strategy and a fire risk  
 17 assessment; is that right?  
 18 A. Yes. So when a project is handed over, the first step  
 19 then is preparing the risk assessment for the building.  
 20 I mean, I'll be covering that later on in a lot of  
 21 detail.  
 22 Q. Yes, in Module 3.  
 23 A. In Module 3. But the first step once the project's  
 24 handed over, and actually just before, is the risk  
 25 assessment, which includes making sure there's

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1 an emergency plan for the building, setting up  
 2 a maintenance programme. Okay? So there's other  
 3 activities that emanate from the risk assessment process  
 4 and the record of risk assessment.  
 5 So to do that well, the details in the fire safety  
 6 strategy are needed for formulating that activity, so  
 7 carrying out the risk assessment in the building and  
 8 setting up all the other systems that will be required  
 9 to manage life safety.  
 10 Q. Yes, I understand.  
 11 Can I just take you to a couple of examples in your  
 12 report where you're emphasising this connection.  
 13 A. Yes.  
 14 Q. If we look at page 15 {BLARP20000017/15} of your report,  
 15 paragraph 2.4.5.  
 16 A. Oh, yes.  
 17 Q. Here you say -- this is early on your report:  
 18 "The connection between assessing the risk of fire,  
 19 and the interrelationship with the package of fire  
 20 protection measures in a building and also, the fire  
 21 safety management provisions, are explained in more  
 22 detail in Section 5 of BS 9999:2008."  
 23 A. Yes.  
 24 Q. I wanted to read out the second paragraph of that. It  
 25 says there:

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1 "By carrying out a risk assessment, the consequences  
 2 of fire on people, property, business and the  
 3 environment can be highlighted to the owner, occupier,  
 4 operator, tenant, designers and insurers. It should  
 5 then be clear what fire safety systems are required, what  
 6 function they have in relation to the protection of  
 7 people, property, business and the environment, and what  
 8 management responsibilities are required to maintain and  
 9 operate these systems."  
 10 A. Yes. So that's the assessment of risk which occurs when  
 11 the fire safety engineer is preparing the fire safety  
 12 strategy.  
 13 Q. Yes.  
 14 A. So I really, really want to keep that totally separate  
 15 from the statutory risk assessment required by others.  
 16 Q. Under the RRO?  
 17 A. Under the RRO.  
 18 Q. Yes, I understand.  
 19 A. So, you know, like I said, there's always multiple  
 20 solutions possible.  
 21 Q. Yes.  
 22 A. But how one hones in on the solution is understanding  
 23 the particular hazards to the particular occupancy or  
 24 other features of the building.  
 25 Q. Yes.

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1 A. And in assessing the resulting risk --  
 2 Q. Yes.  
 3 A. -- there will be one or more preferred solutions.  
 4 So it's a fundamental part of how fire safety  
 5 engineers formulate a design.  
 6 Q. Yes.  
 7 A. A fire safety design.  
 8 Q. Does it follow from what you have said that if you are  
 9 doing a fire safety strategy for an existing building,  
 10 any fire risk assessment that's been done previously is  
 11 a very important source of information?  
 12 A. Yes, it should be a very important source of  
 13 information, because it should tell you if there are,  
 14 quite frankly, problems in the building that are either  
 15 being repaired or will be repaired at a later date. It  
 16 should tell you any particular characteristics of the  
 17 people, you know, people who are vulnerable in the event  
 18 of a fire.  
 19 So very important information should be in a fire  
 20 risk assessment about the profile of the people and the  
 21 profile of the building itself --  
 22 Q. Yes.  
 23 A. -- that you would then factor in to your professional  
 24 assessment and thinking about the risk, you know, the  
 25 hazards that that building poses.

39

1 Q. Yes.  
 2 A. I hope that's clear. Was that clear?  
 3 Q. Yes.  
 4 In your first report you said that the results of  
 5 investigations required for the existing building  
 6 fire strategy will be significant findings for the  
 7 purpose of a risk assessment.  
 8 A. Yes.  
 9 Q. Is that correct?  
 10 A. That's correct.  
 11 Q. Now, that doesn't appear in the later versions of your  
 12 report, but does that still -- is that just an error  
 13 in --  
 14 A. Oh, yes, I would say that's a terrible error,  
 15 I apologise. No, no, that's absolutely --  
 16 Q. For the transcript, that was at 5.4.19 of your first  
 17 report {BLARP20000003/117}.  
 18 A. I would like to put that back in.  
 19 Q. You have pointed out that PAS 911:2007 is also relevant  
 20 here. If we can go to {BSI00000066/10} again, there at  
 21 4.1(a) -- this is about understanding the purpose of the  
 22 fire strategy -- it is saying:  
 23 "Prior to preparing the strategy it is important  
 24 that those involved fully appreciate and understand the  
 25 purpose of the strategy. The main benefits of a fire

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1 strategy are:  
2 "a) To prompt a full and thorough consideration of  
3 the fire safety requirements of the premises in question  
4 and of its occupants."

5 So that's the point you were just making, I think?

6 A. Yes. Yes.

7 Q. So would you agree, on the basis of that, that documents  
8 like this, this publicly available document, suggest  
9 that when a body becomes responsible for a building in  
10 respect of which there's no existing fire strategy, they  
11 should procure one in order to facilitate meaningful  
12 fire risk assessments?

13 A. Yes, I agree with that, because I can't see there's any  
14 other way of, you know, preparing and managing all the  
15 duties you have under the RRO, the Regulatory Reform  
16 Order.

17 Q. Yes. I think if we look then on page 49  
18 {BLARP20000017/49} of your report at paragraph 3.6.19,  
19 you say there:

20 "In Section 2.5 of my report I set out the need to  
21 have a full understanding of the existing fire safety  
22 provisions, when assessing risk in an existing  
23 building."

24 So, overall, is it right that you consider that, in  
25 order to assess the risks posed by fire in a building

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1 and determine how they will be minimised, it's necessary  
2 first to have a full understanding of the condition of  
3 the building --

4 A. Yes.

5 Q. -- the existing fire safety provisions and its  
6 compliance with Building Regulations relating to  
7 fire safety?

8 A. Yes, and its condition, you know, its ability to perform  
9 to the required standard.

10 Q. Yes.

11 A. Yes.

12 Q. Likewise, but conversely, an understanding of the fire  
13 risks posed by a building, given its characteristics and  
14 occupants, is a fundamental part of developing a new  
15 fire strategy; is that right?

16 A. Yes, it is.

17 Q. Just a few questions now on fire safety engineering and  
18 then the competence and CPD relating to fire safety  
19 engineers.

20 Can we turn to a document {INQ00011281}. This is  
21 a document entitled "Fire safety engineering" that's  
22 produced by the Chartered Institution of Building  
23 Services Engineers. It's called guide E, and it's the  
24 fourth edition, dated June 2019, so this is a recent  
25 document.

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1 A. Okay.

2 Q. I just want to look on page 14 {INQ00011281/14} of this  
3 at section 2.1.5 in the right-hand column. This  
4 document is talking about the need for an integrated  
5 approach. I just want to ask you briefly some questions  
6 about this.

7 So those paragraphs -- I'm going to read them first.  
8 2.1.5 on the right-hand side:

9 "Fire safety legislation and guidance thus far has  
10 been primarily driven by disasters and architectural  
11 trends, and has arguably been playing catch-up for  
12 a number of years. The growth and consolidation of fire  
13 engineering as a profession, fuelled by the demand for  
14 more complex building and the use of modern construction  
15 methods and materials, has led to a need for the fire  
16 engineer to adopt a more holistic, considered approach  
17 to design, rather than simply providing specific  
18 technical solutions."

19 Now, just pausing there, would you agree with the  
20 sentiment that's being expressed there about the fact  
21 that the growth and consolidation of fire engineering as  
22 a profession, fuelled by that demand for more complex  
23 buildings, has led to the need for a fire engineer to  
24 adopt a more holistic, considered approach? Do you  
25 agree with that?

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1 A. I think there's a lot of very complex points in that  
2 paragraph so, because of that, I can't simply say yes,  
3 but I don't know that you want to hear anything more  
4 about it.

5 You see, I don't agree that fire engineering is  
6 simply about, you know, holistic approaches to design.  
7 I think any form of professional advice regarding  
8 fire safety --

9 Q. I see.

10 A. -- is fire safety engineering.

11 Q. Yes.

12 A. That paragraph represents a culture that has been  
13 a concern to me and others for a while, that fire  
14 engineering is something that's done in just kind of  
15 peculiar circumstances.

16 Q. Yes.

17 A. And the rest of the time I'm not quite clear what it is  
18 is done. So probably best to leave that.

19 Q. Okay.

20 A. It is true that legislation is driven by disaster and  
21 architectural trends, and it is true that there is more  
22 demand for fire safety engineering professionals when  
23 people have complexity on their projects, yes.

24 Q. Okay, that's helpful.

25 In the second paragraph there, it says:

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1 "It is important that, in developing the fire safety  
 2 design for a building, the fire engineer gives due  
 3 consideration to how the building will be constructed  
 4 and how it will be occupied and operated, as well as how  
 5 it will be managed and maintained once completed. The  
 6 assumptions about all of these factors should be  
 7 documented in the fire safety strategy that the fire  
 8 engineer delivers."

9 A. Exactly.

10 Q. You agree with all of that?

11 A. Absolutely.

12 Q. In terms of that, does that represent what you would  
 13 regard -- I mean, this is a 2019 document -- as good  
 14 industry practice for a fire engineer between 2012 and  
 15 2016?

16 A. It's what should have been good industry practice in  
 17 that time period, yes.

18 Q. Now, competence and fire engineers and CPD, just a few  
 19 questions about this.

20 Do you consider that there was, at the time of the  
 21 Grenfell refurbishment, adequate definition of the  
 22 minimum qualifications and competence of fire engineers?

23 A. Sorry, will you just repeat that again. Do I remember?

24 Q. Do you consider that there was, at the time of the  
 25 Grenfell refurbishment, adequate definition of the

45

1 minimum qualifications and competence of fire engineers?

2 A. If you mean through the IFE, they had a definition?

3 Q. Yes, so I'm going to come to that in a moment and take  
 4 you through that. Shall I just take you through that?

5 A. Okay, yes.

6 Q. If we go back to that Fire Industry Association guide,  
 7 the 2015 guide we looked at earlier, {INQ00011219/3}.

8 This is entitled "Notes on the use of this document",  
 9 but if we look at the penultimate paragraph at the  
 10 bottom of that page, we can see it says this:

11 "It is the client's responsibility to ensure that  
 12 any fire engineer that they intend to use on the project  
 13 is competent."

14 Then it says:

15 "The only industry-wide competence criteria that  
 16 exists for fire engineering companies has been developed  
 17 by the FIA Fire Engineering Council."

18 Do you see that there?

19 A. I do. That's their opinion.

20 Q. Yes.

21 If we look at another Fire Industry Association  
 22 document relevant to this, if we go to {INQ00013948},  
 23 this is something entitled "Guide for the procurement of  
 24 Fire Engineering Services", and it's got a section  
 25 headed "Competence".

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1 A. Yes.

2 Q. I just want to look about five paragraphs down. There's  
 3 a sentence that begins:

4 "The Fire Engineering Council of the FIA ..."

5 Do you see that?

6 A. Yes.

7 Q. I'm just going to read it and some following paragraphs.  
 8 It says:

9 "The Fire Engineering Council of the FIA have  
 10 developed a competence assessment process as part of  
 11 their membership criteria. That remains the only widely  
 12 accepted criteria for 'competence' of Fire Engineering  
 13 companies in the UK.

14 "The FIA competence criteria depends on companies  
 15 employing Chartered Fire Engineers, i.e. Chartered  
 16 Engineers specialising in fire safety.

17 "Chartered Fire Engineers are engineers who have  
 18 been through a verification process to prove that they  
 19 have the adequate education, training and experience to  
 20 work as fire engineers.

21 "This procedure is overseen by the Engineering  
 22 Council, the same body that oversees Chartered Engineers  
 23 within Structural Engineering and other well established  
 24 professions.

25 "The FIA would therefore encourage anyone who

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1 employs Fire Engineering companies to use one of the  
 2 companies who are members of the Fire Engineering  
 3 Council of the FIA. By doing that, clients will have  
 4 demonstrated that they have taken 'reasonable measures'  
 5 to ensure the competence of their Fire Engineers."

6 Now, I've read that out to you in full.

7 So was that your understanding at the time, that  
 8 there was this competence assessment process through the  
 9 chartership scheme? Is that correct?

10 A. Yes, so the IFE is the only body that, you know,  
 11 produces chartered fire safety engineers.

12 Q. Yes.

13 A. The FIA is a trade organisation.

14 Q. Yes.

15 A. Okay? And their opinion is for companies rather than  
 16 individuals to register with them.

17 Q. Yes.

18 A. I don't want to get those two things --

19 Q. I see. That makes sense.

20 A. -- mixed up, okay?

21 Q. Yes, that's helpful.

22 A. So it's a trade organisation, and to join it, there are  
 23 rules.

24 Q. Yes.

25 A. Okay? The IFE produces chartered fire safety engineers.

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1 Q. Yes.  
2 A. It's overseen by the statutory body, I believe the  
3 Engineering Council is.  
4 Q. Engineering Council, yes.  
5 A. And that's the formal method available.  
6 Q. Of becoming a chartered fire engineer?  
7 A. Of becoming a chartered fire engineer, okay? Is that  
8 okay?  
9 Q. That's very helpful, thank you.  
10 SIR MARTIN MOORE-BICK: Can you just tell me this: what's  
11 the make-up of the FIA? You say it's a trade body, but  
12 it would help to know roughly what its membership  
13 encompasses.  
14 A. There's a list of companies that are members of it, so  
15 I probably should say now that Arup are not a member of  
16 it.  
17 SIR MARTIN MOORE-BICK: Right. But what sort of trades, so  
18 to speak?  
19 A. Oh, sorry, fire safety engineering companies.  
20 SIR MARTIN MOORE-BICK: And others?  
21 A. Oh, I genuinely don't know. That's not something I've  
22 checked.  
23 SIR MARTIN MOORE-BICK: Thank you.  
24 MS GRANGE: Thank you.  
25 A. Yes.

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1 Q. You yourself talk about the merits of chartership at  
2 paragraph 2.3 of your report.  
3 A. Yes.  
4 Q. Can we pull that up now. If we go to page 13  
5 {BLARP20000017/13} in your report, there we can see you  
6 have got a section about "Chartered", and you say at  
7 2.3.1:  
8 "An engineer or other building professional  
9 identified as being Chartered has been registered as  
10 a professional in accordance with the requirements of  
11 the Engineering Council."  
12 -- around that time? At your section 4.6 and  
13 following on page 82 {BLARP20000017/82}, you go through  
14 the Exova staff assigned to both the existing and the  
15 refurbishment fire strategy reports.  
16 A. No. Yes. I don't have 4.6 on my screen.  
17 SIR MARTIN MOORE-BICK: Nor do I, but you will in a minute.  
18 A. Oh, okay, that's all right.  
19 MS GRANGE: Sorry, if we can just pull up 4.6 --  
20 A. Sorry.  
21 Q. -- of your report on page 82. Actually I think it  
22 starts on the page before.  
23 A. Yes.  
24 Q. You go through the key staff at Exova and you tell us  
25 whether they had chartership or not.

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1 You state in that section that the only member of  
2 staff who was a chartered engineer and therefore subject  
3 to some form of regulation as an engineer by  
4 a professional body was Dr Clare Barker, who was the  
5 peer reviewer of Cate Cooney's existing fire strategy  
6 report; that's correct, isn't it?  
7 A. Yes. Can I just see the next page?  
8 Q. Yes, sorry, I think that's on the next page.  
9 A. I think that's later. It's okay. That's fine. It's  
10 later on, I think.  
11 Q. Ah, okay.  
12 A. It's okay.  
13 Q. I'll try and get that reference for you. But you can  
14 recall --  
15 A. Absolutely, absolutely.  
16 Q. -- that you concluded that she was the only one that  
17 had --  
18 A. Yes.  
19 Q. -- chartered status as an engineer?  
20 A. Yes.  
21 Q. And therefore you conclude at paragraph 4.6.17 on  
22 page 85 {BLARP20000017/85}, if we go to that, that  
23 no one from the Exova team working on the refurbishment  
24 project was a chartered fire engineer; is that correct?  
25 A. Yes, that's correct.

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1 Q. In your professional opinion, would it have been  
2 necessary for a chartered fire engineer to be involved  
3 in a project of this scale and nature?  
4 A. So I think the best way of answering that question is  
5 that, since about 2015, our policy has been that all our  
6 work is reviewed and certified by a chartered fire  
7 engineer, and I made that decision in 2015 because I was  
8 sufficiently worried about the variety of standards in  
9 our profession. In our organisation, we have very  
10 experienced professionals who are not chartered  
11 fire safety engineers.  
12 Q. Yes.  
13 A. And I think it's very important that an organisation has  
14 requirements for competency, knowledge, learning, skill  
15 to an appropriate standard such that, you know, whether  
16 an experienced person is chartered or not, what you do  
17 as a professional is to the right standard.  
18 Q. Yes.  
19 A. In the future, I think I would prefer if we can reach  
20 a point as a profession where being a chartered  
21 fire safety engineer becomes -- you know, there's other,  
22 say, so-called registered professions. I think in the  
23 future, that's something, you know, I'm thinking about  
24 in that context.  
25 But strictly speaking, there is no requirement for

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1 a chartered fire safety engineer to sign off on  
 2 a project at this time, but I think there is a duty on  
 3 the company to have the persons who are employed and  
 4 responsible for signing off to be at an equivalent level  
 5 of competency.  
 6 Q. Yes, yes. So I think what you are saying is it would  
 7 have been more important to make sure whoever was  
 8 assigned to the refurbishment project was competent to  
 9 carry out that work --  
 10 A. Yes.  
 11 Q. -- whether or not they were chartered.  
 12 A. Yes. I'm not just going to simply say, "You're not  
 13 a chartered fire safety engineer and therefore you  
 14 should not X or Y".  
 15 Q. Yes.  
 16 A. That could be an opinion, but I think if you're very  
 17 experienced and your company has very clear rules on  
 18 standards of competency, standard of knowledge,  
 19 standards of skill, that's very important, as opposed to  
 20 getting through a chartership process.  
 21 Q. Yes, I understand.  
 22 SIR MARTIN MOORE-BICK: So should we understand, then, that  
 23 what you say in paragraph 4.6.17, although a statement  
 24 about the evidence that you have seen, isn't to be taken  
 25 as a criticism of itself of Exova?

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1 A. So in that sentence, it means nothing else. Later on  
 2 I'm clear on --  
 3 SIR MARTIN MOORE-BICK: Well, we'll see what you say later  
 4 on. I just wanted to make sure --  
 5 A. That's just a statement of fact at that moment, that X  
 6 and Y are not chartered, nothing more at that stage.  
 7 SIR MARTIN MOORE-BICK: Thank you.  
 8 MS GRANGE: That's really helpful.  
 9 A. Yes.  
 10 Q. Just briefly to finish off about chartership, just so  
 11 we're all clear on the consequences if you do have  
 12 chartership, is it right that, as a chartered engineer,  
 13 Dr Barker, for example, would have been subject to the  
 14 Engineering Council's regulations and its UK standard  
 15 for professional engineering competence? There is a UK  
 16 spec from the Engineering Council that any chartered  
 17 engineer, including a chartered fire engineer, would be  
 18 subject to.  
 19 A. Yes, that's correct.  
 20 Q. If we could just bring up that Engineering Council's  
 21 UK-SPEC, this is at {INQ00013950}. There we have it.  
 22 This is the third edition which was published in  
 23 January 2014 of the UK standard for professional  
 24 engineering competence by that Engineering Council.  
 25 I just want to look at a couple of references in

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1 this document. On page 30 {INQ00013950/30} of it, it's  
 2 got minimum qualifications that are required to have  
 3 chartership status. Is that correct?  
 4 A. Sorry, where are you?  
 5 Q. So "Education" --  
 6 A. Yes.  
 7 Q. It basically --  
 8 A. Oh, sorry, yes, it does.  
 9 Q. -- explains that:  
 10 "Knowledge and understanding are important  
 11 components ... Formal education is the usual, though not  
 12 the only, way of demonstrating the necessary knowledge  
 13 and understanding, and the following qualifications  
 14 exemplify the required knowledge and understanding for  
 15 Chartered Engineers."  
 16 Then it gives some guidance on that?  
 17 A. Yes.  
 18 Q. Then at page 33 {INQ00013950/33}, in the bottom half of  
 19 the page, this Engineering Council document sets out --  
 20 A. Yes.  
 21 Q. -- certain codes of conduct which members are obliged to  
 22 comply with if they have chartership status. Is that  
 23 right?  
 24 A. That's correct.  
 25 Q. We can see there are 15 broad requirements of conduct,

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1 including having a proper focus on fire safety, keeping  
 2 up to date, and also, I think, whistleblowing is in  
 3 there as well somewhere.  
 4 SIR MARTIN MOORE-BICK: Number 11.  
 5 MS GRANGE: Yes:  
 6 "Raise a concern about a danger, risk, malpractice  
 7 or wrongdoing which affects others ('blow the  
 8 whistle') ..."  
 9 A. Yes.  
 10 Q. Thank you.  
 11 Then I just want to ask you about CPD. In this  
 12 document, if we look at page 35 {INQ00013950/35} now,  
 13 the Engineering Council, if we look in the third  
 14 paragraph on this page, states there:  
 15 "Whilst most engineering professionals undertake  
 16 CPD, this is often on a casual basis, without any  
 17 deliberate planning, recording of activities, or  
 18 conscious reflection."  
 19 Do you see that there?  
 20 A. Yes.  
 21 Q. That's what the Engineering Council is saying in this  
 22 2014 spec about CPD.  
 23 A. Yes.  
 24 Q. It doesn't require that each institution should specify  
 25 a set of core criteria which must be met or studied by

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1 their members.  
 2 But if we look at the Institute for Fire Engineers  
 3 now, we can see if we go to {INQ00013947}, this is  
 4 an Institute of Fire Engineers guide to CPD and  
 5 professional development portfolio. We can see it's  
 6 dated April 2015 at the bottom.  
 7 If you look within this document at page 7  
 8 {INQ00013947/7}, we can see it's beginning at a heading  
 9 "Levels of activity and types of study".  
 10 A. Yes.  
 11 Q. Then if we go over to page 8 {INQ00013947/8}, we can see  
 12 that the headline message at the end of that section in  
 13 the box, "Recommended level of CPD activity - summary",  
 14 is 25 hours per year of formal study time. Informal  
 15 study time equates to half of the actual time spent, and  
 16 then it gives some further detail there.  
 17 A. Yes.  
 18 Q. Do you agree that, at the time of the Grenfell project,  
 19 there was a requirement from the Institution of Fire  
 20 Engineers to be undergoing some CPD each year?  
 21 A. Yes, I do.  
 22 Q. In your experience, is that CPD often provided by  
 23 manufacturers?  
 24 A. Yes. So my experience is there's different forms of CPD  
 25 and, let's say, training. So what we do, so that's my

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1 experience, 70% of your -- we adopt the 70/20/10 rule.  
 2 If you're into learning, that's kind of a thing. So 70%  
 3 is working on projects with other experienced people,  
 4 who supervise and teach you on the project. 20% is,  
 5 you know, probably what people would recognise as CPD,  
 6 where we either invite in experts, or an expert in our  
 7 own team would give a very detailed training session  
 8 sufficient to help you actually change what you're doing  
 9 or get better. Then the other form of CPD is  
 10 manufacturers or, you know, people who sell systems or  
 11 materials are invited in to explain their system and how  
 12 it's been made appropriate for the marketplace from  
 13 a fire safety perspective.  
 14 Q. Yes.  
 15 A. So CPD, it's a bit of a generic term, but it covers very  
 16 informal sessions with product people --  
 17 Q. Yes.  
 18 A. -- more formal sessions with other experts, and  
 19 on-the-project training. I think it's a mix of things  
 20 in terms of producing competence in an organisation.  
 21 Q. Yes, I understand.  
 22 Sticking with that phenomenon of manufacturers  
 23 providing some CPD, do you agree that that's a practice  
 24 which risks the communication of information in a manner  
 25 that's not wholly objective?

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1 A. Yes, so I don't know if I would call a manufacturer  
 2 coming into our company as CPD, actually.  
 3 Q. Yes?  
 4 A. But if one did, it is good to hear these things, but you  
 5 have to apply very specific judgement and  
 6 open-mindedness and challenge when you're listening.  
 7 If the only CPD occurring in an organisation is from  
 8 someone selling a product, that is obviously a concern,  
 9 yes.  
 10 Q. Yes.  
 11 A. You know, it's not enough.  
 12 Q. Yes.  
 13 Now, can we just look at some oral evidence from  
 14 Dr Tony Pearson that he gave on the topic of CPD. If we  
 15 can pull up the transcript for {Day19/7:2-14}. Actually  
 16 let's get the question before we go to the answer. So  
 17 if we can go to the page before {Day19/6:23}. At the  
 18 bottom of that page, I ask him:  
 19 "Question: Now, just thinking back to your time on  
 20 the Grenfell project, when you were at Exova, were you  
 21 carrying out regular continuing professional  
 22 development, CPD? Was that part of the regime within  
 23 Exova?  
 24 "Answer: At the time there was very little formal  
 25 CPD within Exova. They had a regime of regular training

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1 days and encouraging people to visit external seminars  
 2 and whatever training appeared relevant at the time.  
 3 The training budget was somewhat cut in 2008 during the  
 4 recession, and, yeah, the reinstatement of that budget  
 5 was rather a slow process, should we say.  
 6 "Question: I see.  
 7 "Can you recall anything that you did specific to  
 8 external fire spread, any particular courses or CPD that  
 9 might have been relevant to that --  
 10 "Answer: No."  
 11 Now, just on the back of that, we just wanted to get  
 12 your opinion: how much formal CPD would you expect  
 13 a reasonably competent fire engineering firm to have  
 14 been providing in the years, say, 2012 to 2014?  
 15 A. Do you mean the frequency, do you mean like weekly,  
 16 monthly, is that ...?  
 17 Q. Frequency, yes, but also the nature of it, what type of  
 18 CPD would you have been expecting to be provided by  
 19 a competent fire engineering firm?  
 20 A. So I can only tell you my own experience --  
 21 Q. I understand, yes.  
 22 A. -- and, you know, what we do.  
 23 So we have what I would call -- it's not constant,  
 24 but we have weekly, monthly training sessions. We have  
 25 a whole programme of events planned throughout each year

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1 for all the different grades of people who work for us,  
2 and I'm aware that other fire engineering companies  
3 equally have very regular in-house or external  
4 knowledgeable persons coming in to give sessions in  
5 their organisation. I think it a very important part of  
6 being a fire safety engineer.

7 It's a profession where -- for example, I have been  
8 working a long time relative to others in Arup Fire, and  
9 I still have to do very detailed learning and training,  
10 you know, to keep up with, say, changing legislation,  
11 changing techniques, changing materials. It is a very  
12 constant part of making sure your knowledge and skill is  
13 to the standards required.

14 Q. Yes.

15 SIR MARTIN MOORE-BICK: If we look back to 2012, which is  
16 a few years ago now --

17 A. Yes.

18 SIR MARTIN MOORE-BICK: -- is it possible for you to give us  
19 an idea of what the minimum amount of formal CPD would  
20 be, for a reasonably well-run fire engineering group,  
21 company?

22 A. I don't know how to answer that question in hours,  
23 because I've never added up what we do and thought about  
24 it that way, but in 2012, the obligations on people like  
25 me regarding keeping up our knowledge and skill are no

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1 different to the requirements of us today.

2 SIR MARTIN MOORE-BICK: Right.

3 A. Okay?

4 SIR MARTIN MOORE-BICK: I asked the question because you  
5 describe how things are done at Arup, but it might be  
6 said: well, Arup is going beyond what is essential.  
7 I mean, different companies no doubt have different  
8 standards or different expectations.

9 A. Yes.

10 SIR MARTIN MOORE-BICK: And I was trying to get a feel for  
11 whether you are, as it were, at the top of the scale  
12 rather than --

13 A. I don't really actually even want to talk about Arup as  
14 such, but we have very healthy competitive relationships  
15 with other fire safety engineering companies, and I am  
16 very clear that they also do detailed and informal  
17 training. It's just a really important part of the  
18 profession. They would have to tell you how many hours  
19 or the frequency, but I observe what they do. You know,  
20 we're a bit of a collective in terms of sharing  
21 knowledge at times.

22 SIR MARTIN MOORE-BICK: So would it be fair to conclude that  
23 in any well-run fire engineering concern, there would be  
24 regular formal CPD --

25 A. Yes.

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1 SIR MARTIN MOORE-BICK: -- in the form of lectures and  
2 classes, if I can use that expression --

3 A. Yes.

4 SIR MARTIN MOORE-BICK: -- on at least a monthly basis?

5 A. On a monthly basis ...

6 SIR MARTIN MOORE-BICK: Well, give or take over the course  
7 of a year.

8 A. Yes. I think we would do it monthly. I can imagine  
9 others might do it less frequently, maybe once  
10 a quarter. But, you know, I kind of feel like I've just  
11 made that up in the sense I didn't ask anybody before  
12 I came.

13 SIR MARTIN MOORE-BICK: No, it's very helpful, though,  
14 because it's obviously important that we understand what  
15 is the sort of range of professional education that  
16 people might be expected to provide --

17 A. Yes.

18 SIR MARTIN MOORE-BICK: -- so that if any criticism is going  
19 to be made of anyone, we have some yardstick to go by.

20 A. Understood. I think --

21 SIR MARTIN MOORE-BICK: That's very helpful.

22 A. I think CPD means something, you know, it has a meaning,  
23 and it can be quite informal. So the cladding guy comes  
24 in, and it's very interesting, okay? The most important  
25 part of training for fire safety engineers in any

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1 company is working on the projects with more experienced  
2 people.

3 SIR MARTIN MOORE-BICK: That's very helpful, thank you.

4 I'm sorry to interrupt your question.

5 MS GRANGE: No, no. Just one question and then I think we  
6 can break.

7 On the back of that, would you have expected  
8 a reasonably competent fire engineering firm to have  
9 made available courses relevant to B4 and external fire  
10 spread back in 2012? Would there have been some  
11 specific CPD that would be relevant to that topic?

12 A. Do you mean a course on how to read the --

13 Q. It could be anything to do with external fire spread or  
14 B4 more generally. But would you have expected there to  
15 have been some component of a CPD programme that would  
16 address that?

17 A. So for B4 typically calculations are carried out for the  
18 fire spread between buildings rather than up the  
19 building.

20 Q. Yes, that's section 13 of ADB.

21 A. Yes.

22 Q. Yes.

23 A. And I would imagine, you know, if you read Exova's  
24 fee proposals, they offer that numerical analysis, so  
25 I must assume that they offer training to their staff.

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1 Q. Yes.  
 2 A. In terms of B4 and materials, at that time in 2012,  
 3 I think it would have been unlikely.  
 4 Q. Yes.  
 5 A. By 2013 -- I did go back, I dug out all my old notebooks  
 6 the other day to see what I was up to. By 2013, we were  
 7 sufficiently worried about materials and certificates  
 8 that we started to run joint fire and façade seminars  
 9 together within Arup. Is that ...  
 10 MS GRANGE: Yes, that's very helpful, thank you.  
 11 Mr Chairman, that's a good moment for a break,  
 12 thank you.  
 13 SIR MARTIN MOORE-BICK: Dr Lane, we're going to have a short  
 14 break now. We will come back at 11.40, please.  
 15 As I have said to all the other witnesses, please  
 16 don't talk to anyone about your evidence while you're  
 17 out of the room.  
 18 THE WITNESS: I won't. Okay.  
 19 SIR MARTIN MOORE-BICK: Thank you very much.  
 20 (Pause)  
 21 Good, 11.40, please. Thank you.  
 22 (11.25 am)  
 23 (A short break)  
 24 (11.40 am)  
 25 SIR MARTIN MOORE-BICK: All right, Dr Lane, ready to carry

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1 on?  
 2 THE WITNESS: I am, yes, thank you.  
 3 SIR MARTIN MOORE-BICK: Thank you.  
 4 Yes, Ms Grange.  
 5 MS GRANGE: Thank you.  
 6 I now want to come on to the appointment of Exova by  
 7 the TMO and start looking at Grenfell - specific matters.  
 8 A. Is it okay if I just clarify something very briefly?  
 9 Q. Yes, of course.  
 10 A. I was trying to think of a better way to answer the last  
 11 set of questions, and I want to be honest that any  
 12 company that provides fire safety engineering services,  
 13 I do think that it should be chartered fire engineer's  
 14 sign-off on that work, and therefore the minimum  
 15 training provision from the employer is the minimum  
 16 required by the Engineering Council. That's the  
 17 minimum, in my mind, that staff are enabled to do that.  
 18 Anything else is above and beyond.  
 19 SIR MARTIN MOORE-BICK: That's obviously your view as of  
 20 now. Would you have taken that view in 2012?  
 21 A. Yes, because the rules have not changed from the  
 22 Engineering Council about the minimum number of hours.  
 23 SIR MARTIN MOORE-BICK: All right.  
 24 A. Thank you. Yes.  
 25 SIR MARTIN MOORE-BICK: Thank you very much.

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1 MS GRANGE: Yes, that's helpful.  
 2 Now, you note -- and we don't need to turn this up,  
 3 I don't think -- at paragraph 4.3.12 of your report on  
 4 page 53 {BLARP20000017/53} that there was no bidding  
 5 process, you call it, for the appointment of a fire  
 6 engineer to the Grenfell project, and that Markus Kiefer  
 7 of Studio E contacted James Lee and Terry Ashton at  
 8 Exova directly, and we know that there was an ongoing  
 9 relationship with Exova and the TMO, including Exova's  
 10 work on the KALC project.  
 11 I just want to ask you, in your experience, would it  
 12 have been normal in the construction industry at this  
 13 time for fire engineers to be appointed without there  
 14 having been an open tender process? What was the norm  
 15 at the time?  
 16 A. So all different types are the norm.  
 17 Q. Right.  
 18 A. So we would have to bid on a project, you know, against  
 19 other companies. Other projects, you are asked to  
 20 prepare a fee.  
 21 Q. Yes.  
 22 A. Frankly, you know, if you're in a position where you and  
 23 the client agree the scope and fee, obviously that's,  
 24 you know, a nicer position to be in commercially than,  
 25 you know, competing against 20 other companies. So both

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1 types are common practice for fire safety engineering  
 2 companies.  
 3 Q. Yes. Yes.  
 4 Now, you explain in your report that Exova can be  
 5 considered a "'top tier' fire safety engineering  
 6 consultancy firm". We can see that if we go to your  
 7 report, page 55 {BLARP20000017/55}, paragraph 4.3.24, at  
 8 the bottom of that page.  
 9 A. Yes.  
 10 Q. You say:  
 11 "It is worth acknowledging here, that Exova can be  
 12 considered a 'top tier' fire safety engineering  
 13 consultancy firm, with extensive experience, and that is  
 14 their industry reputation."  
 15 A. Yes.  
 16 Q. Then if we go on, at page 59 {BLARP20000017/59},  
 17 paragraph 4.3.34, having noted Exova's expertise and  
 18 qualifications, you say this:  
 19 "By appointing Exova it would be entirely reasonable  
 20 for KCTMO and Artelia, indeed any party, to assume that  
 21 the Grenfell Tower primary refurbishment project team  
 22 had access to and could rely on highly competent experts  
 23 for all aspects of fire safety design and compliance."  
 24 Then in the next paragraph you say this:  
 25 "Because this is not necessarily the case for all

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1 projects that are undertaken in the UK, I think this is  
2 a most important point when considering how the events  
3 of the Grenfell Tower fire came to be."

4 Now, I just want to ask you about that.

5 A. Yes.

6 Q. What do you mean when you say, "Because this is not  
7 necessarily the case for all projects that are  
8 undertaken in the UK"?

9 A. Not all project teams, not all clients, even appoint  
10 a fire safety engineer on a project.

11 Q. Yes.

12 A. Okay? So this project had the benefit of the  
13 appointment of a professional fire safety engineering  
14 company.

15 Q. When you say, "I think this is a most important point  
16 when considering how the events of the Grenfell Tower  
17 fire came to be", again, what do you mean by that?

18 A. I mean that the team and the client had access to  
19 relevant fire safety -- should have had relevant access,  
20 you know, to competent advice.

21 Q. Yes, okay.

22 Now, if we look at the existing fee proposal and  
23 scope of works, if we pull that up, this is at  
24 {EX000001382}. This is dated 11 June 2012.

25 So what I want to do, I'm going to look at the

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1 existing fire strategy work first.

2 A. Okay.

3 Q. Then we're going to come on and look at the  
4 refurbishment work.

5 So this letter is dated 11 June 2012, and if we can  
6 go to page 2 {EX000001382/2} of this report, we can see  
7 that the proposed scope of works is a retrospective fire  
8 safety strategy report for the existing building. We  
9 can see there that it says at the end of that first  
10 paragraph:

11 "The design of the building will be assessed against  
12 relevant design codes relating to the statutory  
13 requirements ..."

14 Including the RRO 2005, and also under Section 20 of  
15 the London Building Acts at that time as well, we see  
16 that there.

17 Then we can see the fee proposal at the bottom of  
18 that page is quoting a sum, right at the bottom there,  
19 under "Fee proposal", of £2,865 plus VAT for that work  
20 on the existing fire strategy, and we can see that this  
21 proposal, on page 3 {EX000001382/3}, was written by  
22 James Lee, a consultant at Exova, and reviewed by  
23 Terry Ashton. We can see that there.

24 We know that TMO accepted the fee on 27 July 2012 in  
25 an email from Appleyards. For the transcript, that's

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1 {EX000000122}.

2 Now, you have also noted in your report that there  
3 is no evidence that anybody queried the fee or kind of  
4 had any difficulties with that fee at the time.

5 A. Yes.

6 Q. You note that, I think, at paragraph 4.3.50 of your  
7 report on page 62 {BLARP20000017/62}.

8 Now, turning to the adequacy of that fee proposal,  
9 can we pull up page 60 {BLARP20000017/60} of your  
10 report, paragraph 4.3.45. What you have done here --  
11 and correct me if I'm wrong -- is set out all the tasks  
12 which you think would have needed to have been  
13 undertaken in order to provide a fire strategy for the  
14 existing building; is that correct?

15 A. Yes.

16 Q. So you have listed out here, starting with attending  
17 site, understanding the building, then you have gone  
18 through -- I'm not going to read them all out -- all of  
19 the different stages of analysis, information gathering,  
20 and then if we go over the page {BLARP20000017/61}, it  
21 goes down to (j). We can see understanding the existing  
22 fire safety risk at (g), fully document their  
23 investigation at (h), set out clear gaps in compliance  
24 at (i), and therefore establish the need for any  
25 mitigation measures, which, again, you discussed

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1 earlier, about that's part and parcel of the fire  
2 strategy work.

3 Then you say at paragraph 4.3.46:

4 "It is my opinion that it is impossible to do all of  
5 this in 3.5 days."

6 Just to be clear, you have got the 3.5 days by  
7 applying Exova's hourly rates to that fee proposal --

8 A. Yes.

9 Q. -- of £2,865; is that correct?

10 A. Yes, approximately.

11 Q. So you have calculated that they seem to be, give or  
12 take -- it may not be precisely --

13 A. Yes, about that time, so less than a week.

14 Q. Yes, saying that they will spend that amount of time,  
15 and it's your opinion, is it, that that was an  
16 inadequate period of time to spend on an existing fire  
17 safety strategy?

18 A. Yes, it is.

19 Q. Now, I just want to look at the oral evidence of  
20 Ms Cooney on this point, because in her evidence  
21 Ms Cooney was asked about this. If we go to the  
22 transcript, {Day14/193:5-17}, and we pick it up here at  
23 line 12, this is Mr Millett asking her questions, and he  
24 says at line 12 on that page:

25 "Question: How long would it normally have taken

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1 you to prepare a final draft, client-ready, for  
 2 a fire strategy for an existing building such as  
 3 Grenfell Tower?  
 4 "Answer: A number of weeks. Solidly for a good  
 5 number of weeks, I would have thought, if it was to meet  
 6 all the requirements.  
 7 "Question: Right.  
 8 "Just to be clear, how long would it take you  
 9 normally to prepare a first draft?  
 10 "Answer: Again, it's dependent on the amount of  
 11 information we have.  
 12 "Question: Right. Okay. Can I ask you --  
 13 "Answer: Up to a week, I suppose.  
 14 "Question: I'm sorry, I cut across your answer.  
 15 "Answer: Anything up to a week, a few days to  
 16 a week, depending on the information we have."  
 17 Do you see that there?  
 18 A. Yes.  
 19 Q. So her evidence was that preparing a final draft,  
 20 client-ready, of an existing fire safety strategy would  
 21 be work covering a number of weeks, solidly for a number  
 22 of weeks.  
 23 A. Yes.  
 24 Q. But perhaps preparing a first draft would be, she says,  
 25 up to a week, a few days to a week.

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1 A. Yes.  
 2 Q. Do you agree with her estimates, first of all of how  
 3 long a client-ready final strategy would take, and then  
 4 a draft?  
 5 A. Yes, so I think it's about a week, she said, for the  
 6 first draft, and was it three weeks or a few weeks?  
 7 Q. She just says solidly for a good number of weeks.  
 8 "A number of weeks", she doesn't give a --  
 9 A. "A number of weeks". Yes, so I agree that the first  
 10 draft, you know, you would do well to get it ready in  
 11 a week, but it's absolutely possible, and then several  
 12 weeks of toing and froing, getting all the information,  
 13 doing all the discussions. If you think back to that  
 14 list of things to do in the PAS, absolutely I can  
 15 imagine taking several weeks to produce the detailed  
 16 existing fire strategy.  
 17 Q. In your opinion, what would a reasonable fee estimate  
 18 have been -- remember, this was back in 2012 -- for that  
 19 work?  
 20 Now, I'm not looking at a precise figure, just  
 21 approximately. We know they were quoting £2,865 plus  
 22 VAT.  
 23 A. That was for -- honestly, if we multiplied their weekly  
 24 fee by four or six. I just haven't done analysis like  
 25 that, I'm afraid, about what Exova should have charged.

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1 Q. I see. So we can take their hourly rates across a week  
 2 and you say between four or six weeks of work?  
 3 A. Yes, that's what they seem to do, so ...  
 4 Q. In your experience, did you ever experience at the time  
 5 people querying fees? Would it be normal for clients to  
 6 come back and say, "Well, that's too low, that's too  
 7 high"?  
 8 A. Yes.  
 9 Q. Would you have expected clients in this case to have  
 10 queried the fees that were proposed?  
 11 A. Yes, so clients do query fees normally, particularly in  
 12 that first half, 2000 to about 2015, it would be, "Can  
 13 your fee be lower?" I think, what was it, it was about  
 14 2,500 --  
 15 Q. 2,865.  
 16 A. £2,800 to produce an existing fire strategy, I suppose  
 17 you need to understand the scale of what's involved, but  
 18 the fee proposal was actually quite detailed.  
 19 Q. Yes.  
 20 A. So I would expect an experienced client or experienced  
 21 architect to maybe ask a question, you know, "Can you  
 22 get this quantity of work done in that period of time?"  
 23 Q. Yes.  
 24 A. But obviously human nature is if you're offered a low  
 25 fee, you're going to take it. I mean, that's not

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1 an expert opinion, that's just the way things are.  
 2 Q. Yes, yes.  
 3 Now, I want to come on now to discuss the site visit  
 4 before we look at the existing fire strategy itself.  
 5 I want to ask you about the visit that was undertaken.  
 6 In general terms, where you have an existing  
 7 building which is the subject of a fire strategy, or you  
 8 have a building that's to be refurbished, how important  
 9 is it, in your opinion, for a fire engineer to visit the  
 10 building on which they're writing a report?  
 11 A. So, as I said earlier, the big issue about an existing  
 12 building is all the unknowns.  
 13 Q. Yes.  
 14 A. So it is very difficult to complete your work or offer  
 15 robust advice without doing your own inspections.  
 16 Now, it's absolutely the case sometimes, and it's  
 17 happened to me, where you may simply not get paid or  
 18 allowed to, you know, go to site and go to the level of  
 19 detail that you might like. That does happen. But then  
 20 you have to qualify your advice and explain exactly the  
 21 limits of your work.  
 22 Q. Yes.  
 23 A. So my preference would be a site visit to really deal  
 24 with all these unknowns. Where that's not possible for  
 25 whatever reason, you must now set out exactly what it is

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1 you need from others.  
 2 Q. So we know in this case that a site visit was possible.  
 3 A. Yes.  
 4 Q. In your opinion, would any reasonably competent fire  
 5 engineer have visited the building if they were  
 6 preparing an existing fire safety strategy?  
 7 A. If you're lucky enough to get paid and given access to  
 8 the building, it's the optimum set of circumstances.  
 9 So, yes, I would expect that as a minimum from  
 10 a fire safety engineer to then go.  
 11 Q. We know that Mr James Lee states at paragraph 3.6 of his  
 12 witness statement -- for the transcript, the reference  
 13 is {EXO00001740/3} -- that he did conduct a site visit  
 14 on 29 May 2012 in order to view the existing condition  
 15 of the tower, and he says such a visit would ordinarily  
 16 involve spending no longer than two hours walking around  
 17 the site.  
 18 In your report, if we look on page 88  
 19 {BLARP20000017/88} of your report, paragraph 4.7.14,  
 20 there you say:  
 21 "It is my opinion that 2 hours is wholly  
 22 insufficient to make a meaningful appraisal of the fire  
 23 safety features of a building of the scale and condition  
 24 at the time, as Grenfell Tower."  
 25 Now, can you just explain to us exactly why you say

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1 that? Why would you need more than two hours to do what  
 2 needed to be done?  
 3 A. You know, you have to have your safety briefing, you  
 4 need to do a walk-around to familiarise yourself, you  
 5 need to try and find where the fire safety measures are,  
 6 I would expect people to take measurements, take photos  
 7 of the smoke control system, the doors, the conditions  
 8 of the lobbies. I just really don't understand --  
 9 I couldn't get that done in two hours, and I just can't  
 10 imagine how anyone could get that done in two hours.  
 11 In two hours, I would do what I would call a cursory  
 12 walk through the building, and I don't consider that to  
 13 be a site visit.  
 14 Q. Approximately how long, in your opinion, do you think  
 15 would have been sufficient if you were preparing the  
 16 existing fire safety strategy?  
 17 A. If I was sending fire engineers to a high-rise  
 18 residential building of that scale, I would expect two  
 19 people to go and to spend at least a day.  
 20 Q. Yes.  
 21 A. Two together. One person to take notes and photos and  
 22 to cross-check each others' observations on the site.  
 23 Q. In your opinion, would it be appropriate for, say,  
 24 Ms Cooney to rely upon a site visit conducted by Mr Lee?  
 25 So, in your opinion, would it be reasonable at the time

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1 for a fire engineer to rely on a site visit that another  
 2 colleague did?  
 3 A. If the site visit is well documented, with notes and  
 4 photographs, yes, it is reasonable to rely on, you know,  
 5 an accurate record.  
 6 Q. Yes.  
 7 A. And to talk to that person about what they've seen.  
 8 Q. Yes.  
 9 A. And we would do that a lot.  
 10 Q. I'll come back to James Lee's site visit in a moment,  
 11 but just thinking about Mr Ashton for the moment, we  
 12 know he is responsible for carrying out the  
 13 refurbishment fire safety strategy reports.  
 14 In your opinion, should he have carried out his own  
 15 site visit with respect to fire safety as it affected  
 16 the refurbishment works?  
 17 A. Do you mean after he reviewed what James Lee produced  
 18 or --  
 19 Q. So at any stage, do you think he ought to have visited  
 20 the site?  
 21 A. Before he did his work, or ever?  
 22 Q. Yes. Or ever.  
 23 A. Okay. So I think that it would be reasonable for him to  
 24 rely on his, let's call it the site team who went, and  
 25 if they gave a very accurate record, which they didn't.

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1 Okay? So then he's in a position where, you know, if he  
 2 hasn't got good records available, it would have been  
 3 better, wouldn't it, for Exova to send another team to  
 4 do a site inspection? I just ...  
 5 Q. Okay.  
 6 A. I think that for any engineer to write the refurbishment  
 7 report, they needed to rely on the existing fire  
 8 strategy, which should have been based on a detailed set  
 9 of site inspection notes.  
 10 Q. Yes.  
 11 A. None of those things actually happened at  
 12 Grenfell Tower.  
 13 Q. Yes.  
 14 Now, can we look at this point at page 255 of your  
 15 report {BLARP20000017/255}. If we go there to  
 16 paragraph 8.3.1, you say there:  
 17 "I have seen no evidence in the documentation  
 18 provided to me that James Lee recorded any information  
 19 relating to his site visit of the 29th May 2012, either  
 20 in the form of handwritten site notes, photographs or  
 21 marked up drawings."  
 22 Now, in fact, it does appear that James Lee did take  
 23 a series of photographs --  
 24 A. Yes, that's correct.  
 25 Q. -- during his site visits, and these are exhibited to

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1 his witness statement.  
 2 A. Yes, and that is referred to in my report.  
 3 Q. Can we just look at those photographs just for a moment.  
 4 This is {EXO00001749}. So we see a series of  
 5 photographs. I think it's across 24 pages, so we can't  
 6 show them all, but perhaps if we could just scroll down  
 7 a few pages, just to get a sense of the photographs.  
 8 (Pause)  
 9 Now, I just want to check, first thing: have you  
 10 seen these photographs before?  
 11 A. Yes, I have.  
 12 Q. So when you have given your opinion about the site  
 13 visit --  
 14 A. Yes.  
 15 Q. -- you have taken these into account?  
 16 A. Yes, I have.  
 17 Q. Do you consider that any helpful information would be  
 18 provided by these photographs?  
 19 A. I can't orientate myself looking at these photos, and  
 20 I struggle to see what they're for. So if I had been  
 21 given these photos, I would need to have a written  
 22 description beside it, or it pasted on to a drawing,  
 23 saying, "I took the photo here, and if you refer to this  
 24 drawing, this is what we observed in this location".  
 25 Q. Yes.

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1 A. And other information.  
 2 Q. Yes.  
 3 A. I cannot interpret those photos myself. Maybe others  
 4 could.  
 5 Q. I think you are saying you would need other information  
 6 sitting side by side with these photographs to be able  
 7 to make any sensible use of them?  
 8 A. Yes. You have to understand their location, and even  
 9 a short written explanation as to, you know, what it is  
 10 is being observed and why.  
 11 Q. Yes.  
 12 A. And typically people paste them on to a drawing with  
 13 some arrows, and you have another little text box with  
 14 some notes, so then other people in the future can refer  
 15 back, orientate themselves, which is absolutely  
 16 critical, and work out the location of the photo and  
 17 consider the building in that location.  
 18 Q. Would you have regarded that as a minimum standard of  
 19 competence back in 2012, to produce that from a site  
 20 visit?  
 21 A. Yes.  
 22 Q. Now, I just want to just take stock of what Ms Cooney  
 23 had available to her when she drafted the existing  
 24 fire strategy report which she produced. I'm just going  
 25 to list out what she had.

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1 We know that she had the original plans of  
 2 Grenfell Tower on microfiche.  
 3 A. Yes.  
 4 Q. She had had a discussion on the telephone, she said,  
 5 about the layout with James Lee, who did the site visit.  
 6 A. Yes.  
 7 Q. She had these photographs, which we have just covered.  
 8 A. Yes.  
 9 Q. She reviewed the then current fire risk assessment,  
 10 that's Mr Carl Stokes' fire risk assessment dated  
 11 December 2010 which she had been sent.  
 12 A. Yes.  
 13 Q. We know she had an email exchange on 10 August 2012 with  
 14 Mr Sounes about issues such as the dry riser and the  
 15 lift.  
 16 A. Yes.  
 17 Q. She had some more information about the existing smoke  
 18 lobby system, but we know she hadn't visited site  
 19 herself.  
 20 Now, given what we know about that, and the  
 21 information she had, do you consider in your opinion  
 22 that that was adequate information on which to draft  
 23 an existing fire safety strategy?  
 24 A. I think that it's very limited information to attempt to  
 25 draft an existing fire safety strategy.

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1 Q. Yes.  
 2 A. And professionally I would be uneasy.  
 3 Q. Right.  
 4 A. One could still write a draft.  
 5 Q. Yes.  
 6 A. Okay? But I would want to see quite a long list of all  
 7 the information not available, all the things I couldn't  
 8 work out, and sometimes that's all you can do --  
 9 Q. Yes.  
 10 A. -- is write a strategy that literally says, "I just need  
 11 all this information", you know, write a report and set  
 12 out all the information you need and why, even under  
 13 each part of the Building Regulations.  
 14 Q. Yes.  
 15 Now, in her oral evidence she was asked about what  
 16 information she had. She was asked about whether she  
 17 had access to any fire safety policies, she said no, she  
 18 didn't think so. She was asked whether she had access  
 19 to any fire safety management policies or procedures and  
 20 she said no. And she was asked whether she had  
 21 requested any maintenance records, and she said: "No,  
 22 but I wouldn't normally ask for maintenance records for  
 23 a fire safety strategy".  
 24 Now, in your view, would all of those things be  
 25 matters that you would be asking for: fire safety

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1 policies , fire safety management policies and  
 2 maintenance records?  
 3 A. Yes, so one needs that information because when  
 4 a fire safety engineer writes an existing strategy, one  
 5 of the critical points is explaining what's performing  
 6 or not in that existing building. You have to know if  
 7 the fire safety systems are performing to any standard.  
 8 Q. Yes.  
 9 A. Okay? And I think something that really strikes me from  
 10 that time is that Bruce Sounes told Cate Cooney the  
 11 lifts were not firefighting lifts in an email --  
 12 Q. Yes.  
 13 A. -- whereas the risk assessment says the lifts are  
 14 firefighting /evacuation lifts .  
 15 Q. Yes.  
 16 A. And that's a really good illustration about that next  
 17 step of checking or investigation the fire safety  
 18 engineer needs to do. You now have two conflicting  
 19 pieces of information, it's quite common, so now I need  
 20 those records to establish for myself independently: is  
 21 Bruce Sounes correct or is Carl Stokes in his risk  
 22 assessment correct, or is it something else entirely?  
 23 Q. Yes.  
 24 A. That's what makes existing fire strategies so  
 25 complicated.

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1 Q. Yes. Just to be clear, for the transcript, I think the  
 2 exchange you're referring to there is an email from  
 3 Mr Sounes dated 10 August 2012, that's at  
 4 {EX000001592/2}, where he says it's not a firefighting  
 5 lift .  
 6 A. Yes.  
 7 Q. Yes.  
 8 Now, if we can now turn up page 298 of your report  
 9 {BLARP20000017/298} and look in section 10, I want to  
 10 look at 10.1.3. So you say here in this paragraph:  
 11 "Exova had a contract to ascertain the existing  
 12 building condition and set out its fire safety condition  
 13 at that time. By means of this work, as I have  
 14 explained earlier , they had a duty and the opportunity  
 15 to understand the condition of the active and passive  
 16 fire protection measures in Grenfell Tower; both with  
 17 regard to the original Regulations and the current  
 18 Regulations, as they saw fit at that time."  
 19 A. Yes.  
 20 Q. So you're describing it there as a duty and  
 21 an opportunity.  
 22 Can you help us as to why this was an opportunity to  
 23 understand those measures and how important was that  
 24 opportunity?  
 25 A. Yes. Well, it was an opportunity because the

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1 professional team realised very early in their  
 2 deliberations during stage C that they were making  
 3 changes to the building, and they correctly understood  
 4 that those changes could impact fire safety standards.  
 5 Okay? So the existing fire strategy was commissioned,  
 6 and so this was a moment in time where a competent  
 7 person could understand exactly what condition  
 8 Grenfell Tower was in with respect to its active and  
 9 passive measures, and also how the people were being  
 10 protected in the event of a fire , and I particularly  
 11 mean, say, people who may have needed assistance and  
 12 arrangements being made for them.

So there was an opportunity to be very open and  
 honest with the client and the design team, "X and Y  
 systems are a concern. Let's get back to the lifts  
 again. The risk assessment says they're there to enable  
 evacuation in the event of a fire . Is this actually  
 correct?"

So there was an opportunity to properly define the  
 baseline safety condition of Grenfell Tower.

21 Q. Yes.

22 A. Yes.

23 Q. Just to be clear, I think you say in your report that  
 24 that work on the existing fire safety strategy should  
 25 have fed directly into the refurbishment fire strategy .

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1 A. Absolutely.  
 2 Q. Yes.  
 3 A. And then the refurbishment brief could then say, "We're  
 4 going to fix X and Y, you know, we're leaving A and B",  
 5 for example, "and we're going to mitigate it in  
 6 a different way". So you take that baseline safety  
 7 condition, and you're absolutely explicit about what the  
 8 primary refurbishment is going to deliver in terms of  
 9 a fire safety objective .

10 Q. Yes.

Now, at paragraph 5.7.1 of your report, if we go to  
 page 157 {BLARP20000017/157}, here is the section where  
 you're setting out your conclusion about the adequacy of  
 the existing building report, and you have identified  
 a number of inadequacies, you have listed them all out  
 very clearly here in your conclusions section .

We're going to discuss some of those in more detail  
 shortly, but before we do that, I just want to ask you  
 some more general questions.

If we go over the page at page 158  
 {BLARP20000017/158}, we see the rest of the list , and  
 then we can see at the bottom of that page, you say:

"In summary, I find the Exova Existing Fire Safety  
 Strategy report for Grenfell Tower to be wholly  
 inadequate for any relevant purpose to which it was

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1 supposed to be put.”  
 2 We see that there.  
 3 A. Yes.  
 4 Q. If we look over the page {BLARP20000017/159} at the next  
 5 two paragraphs, top of that next page, you say:  
 6 “It could not therefore be relied upon as an up to  
 7 date explanation and record of the existing building  
 8 condition.  
 9 “It could not therefore not be relied upon to carry  
 10 out the statutory fire risk assessment, as the TMO had  
 11 a separate duty to do.”  
 12 Now, did you have experience of seeing existing fire  
 13 safety strategy reports produced by other professionals  
 14 at around this time? Because what I want to ask you is:  
 15 was that report surprisingly inadequate, or do you  
 16 consider that that reflected shortcomings across the  
 17 industry at the time?  
 18 A. I’ve really focused on Grenfell Tower in all the work  
 19 I’ve done for the Inquiry so far.  
 20 Q. Yes, I understand.  
 21 A. I suppose the best way of putting it is that, as I said  
 22 right at the start, by 2015, I was sufficiently  
 23 concerned about varying standards that we made our  
 24 decision about signing off our own work by chartered  
 25 fire engineers.

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1 Q. Yes.  
 2 A. Yes, I have seen good existing fire strategies, and  
 3 I have seen bad ones.  
 4 Q. Yes.  
 5 A. I can’t really help you any further than that.  
 6 Q. No.  
 7 A. Other than go off and find other strategies and come  
 8 back here and tell you what I found.  
 9 Q. Okay, I understand.  
 10 A. Yes.  
 11 Q. Now, unknowns and assumptions. One of the inadequacies  
 12 which you have referred to at paragraph 5.7.1(f) on  
 13 page 157 {BLARP20000017/157}, if we just go back to  
 14 that, is that you say at the bottom:  
 15 “Exova’s report does not adequately identify future  
 16 investigation actions for Exova or others, for all  
 17 aspects of the building where they define information as  
 18 not known; nor provided any explanation as to how that  
 19 missing information had been factored into their  
 20 assessment of risk at the time.”  
 21 Yes?  
 22 A. Yes.  
 23 Q. Now, Mr Millett explored some of this when Ms Cooney  
 24 gave oral evidence, and he put to her that there were  
 25 a large number of assumptions made in the report or

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1 unknowns listed within it.  
 2 A. Yes.  
 3 Q. Is it normal, in your experience, to make some  
 4 assumptions when carrying out a fire safety strategy on  
 5 an existing building? I think we should take into  
 6 account that Ms Cooney said this was a draft strategy  
 7 she had provided. Her work was a draft.  
 8 A. Why do we need to take that into account? Sorry, what  
 9 do you mean by -- it sounds like a qualifying remark.  
 10 Q. So what I would ask is at that first draft stage --  
 11 A. Okay, sorry.  
 12 Q. -- of a fire strategy, would it be normal to make some  
 13 assumptions when writing that first draft?  
 14 A. So the purpose of a draft is to get more information.  
 15 Q. Yes. But is it right that, in your opinion, although it  
 16 identified assumptions, it wasn’t clear about future  
 17 investigation actions?  
 18 A. No. So I would expect to see the information that was  
 19 required and why it was required and by when, and even  
 20 assigned to particular individuals if needs be.  
 21 Q. Yes.  
 22 A. And, you know, a clear statement that, until that  
 23 information is, you know, available, the report cannot  
 24 be relied upon.  
 25 Q. Right. Yes.

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1 Now, can we just take some examples, and look at  
 2 some examples. So at pages 121 to 142 of your report,  
 3 what you have done is you have reproduced a section of  
 4 Ms Cooney’s report on the left, and then your comments  
 5 on the right. Is that right?  
 6 A. Yes.  
 7 Q. So we see that, and this is in, I think, A3 in the  
 8 original version. So we can see that there.  
 9 If we can go first to page 124 {BLARP20000017/124}  
 10 of your report, and if we could blow up the top of that  
 11 page, what you have done is you have helpfully segmented  
 12 the sections of their report into little boxes, and we  
 13 can see that, looking at that introduction box on the  
 14 left -- I’m sorry this is so small -- in the third  
 15 paragraph, Ms Cooney has written:  
 16 “This existing fire safety strategy covers the fire  
 17 precautions in place in the existing building as built  
 18 in the 1970s, drawn up from information gathered through  
 19 a non invasive site survey, a desktop study of the  
 20 original plans from the microfiche archive and the  
 21 current fire risk assessment.”  
 22 Then she says in the next paragraph:  
 23 “It is expected and therefore assumed that the  
 24 existing building has been built to the prevailing  
 25 standards of the day, thought originally to be the

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1 Building Regulations 1965, which did little more than  
 2 require the structure of the building to have  
 3 fire resistance ..."  
 4 So there she is saying it's assumed that the  
 5 building has been built to the prevailing standards of  
 6 the day, and then in the next paragraph she said:  
 7 "It is assumed that the various provisions required  
 8 by the above legislation have been maintained since the  
 9 building was constructed and subsequent amendments have  
 10 been carried out with the approval of the regulating  
 11 authority of the day."  
 12 So she is making assumptions about the existing  
 13 building being built to the prevailing standards of the  
 14 1970s, and then she is saying it's assumed that any  
 15 amendments subsequently have been carried out with the  
 16 approval of the regulating authority of the day; yes?  
 17 A. Yes.  
 18 Q. Then we can see on the right-hand side of that page --  
 19 sorry, it's hard to refer to these, but --  
 20 SIR MARTIN MOORE-BICK: Would it be worth expanding half the  
 21 page?  
 22 MS GRANGE: Yes. If we now expand the lower half of that  
 23 right-hand side of the page. There you can see where  
 24 you have set out "In the fourth paragraph, Exova state",  
 25 and there is a quote. Do you see that there?:

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1 "It is expected and therefore assumed that the  
 2 existing building has been built to the prevailing  
 3 standards of the day ..."  
 4 A. Yes.  
 5 Q. You say this:  
 6 "Exova do not identify the specific documents that  
 7 represent 'the prevailing standards of the day' for  
 8 Grenfell Tower. Neither do they provide any information  
 9 on steps that they took to verify that Grenfell Tower  
 10 was compliant with the standards which would have been  
 11 current at the time of the design and construction of  
 12 the building.  
 13 "In Paragraph 5 Exova assume that the building has  
 14 been maintained since construction, and that any  
 15 amendments 'have been carried out with the approval of  
 16 the regulating authority of the day'.  
 17 "Exova do not identify what if any steps they have  
 18 taken to verify that the building has been maintained  
 19 and that any amendments satisfy the relevant  
 20 legislation /guidance. I consider it wholly  
 21 inappropriate for an existing building fire safety  
 22 strategy to make such an assumption."  
 23 Do you see that there?  
 24 A. Yes.  
 25 Q. Just to be clear on your evidence, is it your evidence

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1 that both of those assumptions, both the assumption  
 2 about being built to the prevailing standards of the day  
 3 and your assumption about how the building is  
 4 maintained, are inappropriate?  
 5 A. The whole point of an existing fire safety strategy is  
 6 to be clear on what is there.  
 7 Q. So you don't think it's acceptable to assume that it  
 8 must have been built to the prevailing standards and it  
 9 must have been maintained and had the approval of the  
 10 regulating authority since?  
 11 A. If I was given that report, I would ask: what does that  
 12 mean to me now, in terms of the fire safety, you know,  
 13 how I can protect life in that building? What does that  
 14 actually mean?  
 15 Q. Is that because, in your experience, it can sometimes be  
 16 a false assumption to assume that building works have  
 17 been carried out to the appropriate standards?  
 18 A. Yes.  
 19 Q. I want to look at what Ms Cooney said in her evidence  
 20 about this, when giving evidence to the Inquiry. If we  
 21 can pull up the transcript {Day14/121:9-17}. She was  
 22 asked about this assumption at line 7 by Mr Millett:  
 23 "Question: Now, on what basis did you form that  
 24 expectation or assumption?  
 25 "Answer: On the basis that the building having been

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1 long-standing in the same use as it was constructed to  
 2 be used for, and the very stringent adherence to Acts  
 3 such as the London Act, section 20, et cetera, and the  
 4 requirement for a fire risk assessment being in place  
 5 for several years prior to, I think it was a reasonable  
 6 assumption to assume that any works that had been  
 7 carried out had been done in a workmanlike manner, and  
 8 that there was no significant deviations from the  
 9 guidance."  
 10 Do you see that there?  
 11 A. Yes.  
 12 Q. She also explains later in her evidence that she thought  
 13 there was nothing unusual about its layout at the time.  
 14 Now, the points I want to put to you are: this was,  
 15 on her evidence, a first draft of a report, and it was  
 16 requested within a short timeframe; how much work would  
 17 have been involved if Ms Cooney had checked those  
 18 assumptions?  
 19 A. How do you mean -- sorry, what do you mean it was  
 20 requested in a short timeframe? Sorry, I'm just afraid  
 21 to answer the question like this.  
 22 Q. I think we probably have to read that as requested from  
 23 her within a short timeframe. I think you're right  
 24 that --  
 25 A. Oh, right, sorry. Okay, I understand.

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1 Q. -- within Exova's instruction, it's not a short  
2 timeframe.  
3 A. Exactly. So if we can --  
4 Q. Yes, I understand.  
5 A. -- park that remark, I've now actually forgotten what  
6 you asked me, I'm really sorry.  
7 Q. No, that's all right.  
8 So the points I want to put to you are: it's a first  
9 draft of a report; how much work would have been  
10 involved if she had had to check those assumptions, and  
11 was that reasonable to carry out?  
12 A. If I understand you correctly, they had been to the  
13 site, they had some drawings, they had access to staff  
14 at the TMO who had knowledge of the building. Even  
15 an email or a request for a meeting -- there's very  
16 simple ways to get another layer of information so your  
17 assumptions are reasonable.  
18 Q. Sorry, which assumptions are reasonable?  
19 I think you're critical of her for assuming that it  
20 was built to the prevailing standards, and assuming that  
21 any subsequent works had been approved by the relevant  
22 authorities. I think what you're saying is that those  
23 things should have been checked; is that right?  
24 A. Absolutely, because if that's not true, it has some very  
25 significant actions arising.

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1 Q. Yes.  
2 A. And I think I'm trying to say that there's simple ways  
3 to explore those two points more, so you're not making  
4 such a sweeping assumption.  
5 Q. I see, yes.  
6 And if you were sending a fire engineer off to do  
7 this report, you would expect them to have carried out  
8 those checks, would you?  
9 A. Yes, I would. So when they come back from site with  
10 their measurements and photographs, which, you know, one  
11 would then compare with the prevailing standards of the  
12 day -- remember, there were active systems in that  
13 building with well-documented problems at the time.  
14 That needed to be looked into too. Those systems did  
15 not -- no significant deviations from the guidance, and  
16 there is another thing about maintenance. It wasn't  
17 applicable to everything in the building.  
18 Q. I see.  
19 Would it be relevant that there was nothing in the  
20 material that Exova had which would suggest that there  
21 had been unapproved works carried out from a planning or  
22 building control perspective?  
23 A. Do you mean with the drawings they had?  
24 Q. Yes. Would it be relevant that in none of the  
25 information they had was there anything to suggest

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1 unapproved works had been carried out? Would that be  
2 relevant?  
3 A. So that's a piece of information, but that's why your  
4 own independent inspection of the building to make sure  
5 that's a valid piece of data still is so important when  
6 you formulate an existing fire safety strategy.  
7 Q. Yes.  
8 Now, Ms Cooney acknowledged that, at the time her  
9 draft report was prepared, she did not have all the  
10 information required, including in part because certain  
11 aspects of the building had not been addressed in the  
12 fire risk assessments provided to Exova, and she  
13 expected that Exova would receive some feedback in  
14 relation to the areas in which assumptions had been  
15 made.  
16 Now, do you consider that that was reasonable on her  
17 part, to put these assumptions in and assume that, if  
18 anyone's got any evidence to contradict that, someone  
19 will come back to her and say, "Well, actually, you have  
20 made that assumption; it's not correct"?  
21 A. No, I don't think it's acceptable to issue a report and  
22 then wait for other people to notice what the problems  
23 are.  
24 Q. Why not?  
25 A. Because I think they need assistance from the competent

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1 person in understanding what the issues are and why, and  
2 what the next steps are. That kind of passive,  
3 you know, "The report's gone out, we're done", I don't  
4 agree that that allows the report to end up being more  
5 than a draft, and any report a fire safety engineer  
6 issues, the whole idea is it doesn't stay draft for very  
7 long; it's to become an issue version because that last  
8 bit of work is done or the information is received from  
9 others.  
10 Q. Yes.  
11 A. You need to take the next step.  
12 Q. Can we take another example. Can we go now to page 131  
13 {BLARP20000017/131} of your report, and I want to focus  
14 at the top of that page, first of all, on the left-hand  
15 side, where we see the extract from Ms Cooney's report.  
16 At 3.3.4 there, she has dealt with evacuation  
17 principles in the residential areas, and she's said  
18 there:  
19 "The recommendations in the current guidance of  
20 Approved Document B support an evacuation strategy which  
21 is based on the following assumptions ..."  
22 Then in the third bullet there she said:  
23 "Due to an assumed high degree of compartmentation  
24 and therefore a low probability of fire spread beyond  
25 the dwelling of fire origin, simultaneous evacuation of

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1 the building is unlikely to be considered necessary ..."  
 2 Do you see that there?  
 3 A. Yes.  
 4 Q. Then if we look on the right-hand side, you have in that  
 5 box first of all set out an extract of what she says  
 6 there from that third bullet point, that's the third  
 7 line down, and then you say this:  
 8 "However, Exova do not identify what information  
 9 they have relied upon to make such an assumption, or  
 10 what performance criteria are required for the fire  
 11 compartmentation.  
 12 "Exova go on to state in their third bullet point:  
 13 "... simultaneous evacuation is unlikely to be  
 14 considered necessary.'  
 15 "... [that] follows the form of guidance in ..."  
 16 Then you give a reference in ADB:  
 17 "I note that Exova provide no direction to the  
 18 Responsible Person as to whether any preparation might  
 19 be required to enable simultaneous evacuation ..."  
 20 So you are making two points there and I want to  
 21 focus on the first point.  
 22 A. Yes.  
 23 Q. So you are saying she doesn't identify what information  
 24 she had relied upon to make an assumption about the high  
 25 degree of compartmentation. Can you explain why that

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1 was so important that she did that?  
 2 A. So let's take fire doors, okay? A very important part  
 3 of the compartmentation between the flats and the lobby.  
 4 What did Exova do to establish their performance in  
 5 Grenfell Tower?  
 6 Q. So you would have expected them to have taken some steps  
 7 to identify what the fire performance was of, say, the  
 8 flat doors at levels 4 to 23?  
 9 A. Yes, because on the site inspection they will have had  
 10 opportunity to observe them, and ask questions about  
 11 when they were installed or not, relevant to the  
 12 drawings Ms Cooney had.  
 13 Q. Can you help us, in fact, the assumption of a high  
 14 degree of compartmentation -- remember, this is for the  
 15 existing building -- was that incorrect, to make that  
 16 assumption that there was a high degree of  
 17 compartmentation?  
 18 A. Well, I can say that now, yes. So the fire doors were  
 19 installed in Grenfell Tower in some part by then.  
 20 Q. Yes, that had been in 2011, yes.  
 21 A. And the smoke control system was not operating as it was  
 22 required to do, and that's also part of protecting the  
 23 firefighting shaft and escape compartment.  
 24 Q. Yes. I see, yes, that's helpful.  
 25 Now --

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1 A. And --  
 2 Q. Sorry.  
 3 SIR MARTIN MOORE-BICK: Sorry, had you finished?  
 4 A. It's just in a building with a stay-put strategy, and in  
 5 an existing building with that strategy, that's why the  
 6 site visit is so important, because you're so reliant on  
 7 those features.  
 8 MS GRANGE: Yes.  
 9 A. It's, you know -- yes, anyway, I have made the point.  
 10 Yes.  
 11 Q. Just going back to something you say in your report on  
 12 page 147 {BLARP20000017/147} at paragraph 5.4.31, you  
 13 say in this section:  
 14 "If there were aspects of the building condition  
 15 that were not known by the appointed competent person  
 16 (Exova) as they stated at the time, then presumably the  
 17 responsible person (KCTMO) did not have access to that  
 18 information either."  
 19 Now, on what basis have you presumed there that the  
 20 responsible person wouldn't have access to that  
 21 information either?  
 22 A. I think what I was trying to say there is: if the TMO  
 23 were relying on Exova to produce an existing building  
 24 strategy, it's reasonable to expect that the condition  
 25 of, you know, let's say the basic active and passive

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1 fire protection features would have been considered by  
 2 them. So if they don't communicate that in that report,  
 3 it means that the TMO or the responsible person -- well,  
 4 won't have the benefit of that information.  
 5 Q. Now, turning to a different subtopic, another inadequacy  
 6 that you have set out this time at paragraph 5.7.1(e) on  
 7 page 157 {BLARP20000017/157}, if we can pull that up --  
 8 A. Actually, I think I had better just saying another thing  
 9 there -- just moving quite quickly.  
 10 Q. Sorry.  
 11 A. I was also trying to make the point that I would expect  
 12 the TMO to also give any other information they had to  
 13 the fire engineer appointed by them to do the existing  
 14 building condition.  
 15 Q. Yes.  
 16 A. Okay? So they have an important role in being open and  
 17 honest with the fire safety engineer who is going to  
 18 carry out that work for them, so it's two specific  
 19 things.  
 20 Q. Yes.  
 21 A. Yes.  
 22 Q. Yes.  
 23 So at 5.7.1(e) on page 157, you have said that  
 24 Exova's report doesn't identify the relevant guidance  
 25 used as a benchmark for Exova's assessment, and I just

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1 want to look at a couple of examples where you have  
 2 highlighted that.  
 3 Now, if we go to look at page 127  
 4 {BLARP20000017/127}, again, into your table, and when  
 5 you're dealing with section 3.2.1 -- so on the left-hand  
 6 side, we can see Ms Cooney's draft report, and it's got  
 7 at 3.2.1 "Levels 1 and 2", and she says:  
 8 "It is unknown whether the community areas and  
 9 nursery are covered by an automatic fire detection  
 10 system (AFD) or a manual system triggered by manual call  
 11 points. The provision of AFD would not necessarily have  
 12 been required at the time of construction, indeed today  
 13 a manual system may be the minimum level required by the  
 14 Regulatory guidance, as the travel distances to the  
 15 closest storey/final exit from the building would comply  
 16 with current permitted travel distances."  
 17 So she has made an assertion about compliance there.  
 18 A. Yes.  
 19 Q. Then if we go to the right-hand side of your table,  
 20 I think five paragraphs down, just below the middle of  
 21 that page, there is a paragraph beginning:  
 22 "The Exova fire strategy does not identify which  
 23 'Regulatory guidance' is being referred in this section.  
 24 Further, the language used in the statement '... indeed  
 25 today a manual system may be the minimum level required

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1 by the Regulatory guidance' does not give a clear  
 2 direction to KCTMO as to the requirements for detection  
 3 and alarm ..."  
 4 Do you see that there?  
 5 A. Yes.  
 6 Q. This is just an example, and there are other examples  
 7 you have given in this long table of where you would  
 8 expect to see it actually stated what the regulatory  
 9 guidance is that they're drawing from.  
 10 Now, can you help us as to why you think it was  
 11 important that that regulatory guidance was highlighted  
 12 by Exova in their report?  
 13 A. So I would expect them to explain what they had seen  
 14 installed or not in those rooms, any requirements from,  
 15 you know, the time the building was constructed, and if  
 16 they thought what was installed in the building at that  
 17 time remained appropriate.  
 18 Q. Yes.  
 19 A. Because those rooms before the refurbishment were part  
 20 of a single-stair building in a residential building,  
 21 and typically you don't share stairs, for example.  
 22 Q. Yes, we're going to come on to that point.  
 23 A. Okay.  
 24 Q. Going back to the point about it's not identifying which  
 25 regulatory guidance is used, the point I want to put to

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1 you is: we know that these reports are going to be used  
 2 principally by the architect to help its design  
 3 guidance; would you expect architects to be able to read  
 4 and understand ADB for themselves, or something like ADB  
 5 for themselves? Why do you need to spell out, if you're  
 6 Exova, what the regulatory guidance is?  
 7 A. How do you know she is referring to the ADB there?  
 8 That's my problem. Okay?  
 9 Q. Yes.  
 10 A. So I don't know. I can speculate. I don't know.  
 11 Should an architect be able to interpret that  
 12 English precisely? I don't know that any person can  
 13 interpret that without considerable personal inference,  
 14 and I just don't agree that that's an appropriate way to  
 15 communicate.  
 16 I genuinely don't know what document she is  
 17 referring to, what it says in there, and what I need to  
 18 now do. Architect or not, I should be able to  
 19 understand that from a report.  
 20 Q. I see. So what you are saying is it should be crystal  
 21 clear on the face of the report exactly what guidance  
 22 she is referring to in each part of the report?  
 23 A. I think so, and then even if one doesn't list out  
 24 everything, the reader can go to the original source and  
 25 even read it for themselves then.

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1 Q. Yes.  
 2 A. Okay?  
 3 Q. So you don't think it's reasonable to say, "Well, we  
 4 know the architects are going to be one of the end users  
 5 of this report, we can rely on architects to know what  
 6 the regulatory regime is and to know for themselves  
 7 which bits I'm referring to?"  
 8 A. Absolutely not.  
 9 Q. No.  
 10 Just a small point then on this part: we can see  
 11 there that you're critical in the next part -- so in  
 12 that same paragraph you have made the point about not  
 13 identifying regulatory guidance in the first sentence,  
 14 and then you say:  
 15 "Further, the language used in the statement  
 16 '... indeed today a manual system may be the minimum  
 17 level required' does not give a clear direction to KCTMO  
 18 as to the requirements for detection and alarm on  
 19 levels 1 and 2 ... it is unclear if a manual fire alarm  
 20 system is the minimum permitted provision."  
 21 The point I'm asked to put to you is: was a manual  
 22 alarm system in fact the minimum permitted level of  
 23 alarm and detection at the time?  
 24 A. At this time?  
 25 Q. Yes.

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1 A. I think I wrote that it was, yes.  
 2 Q. Yes.  
 3 A. Strictly speaking. But if I was giving advice back  
 4 then, I now have to contemplate the fact that this is  
 5 a high-rise residential building with other uses sharing  
 6 a stair, and I would feel obliged to risk-assess that  
 7 and maybe give other guidance.  
 8 Q. Yes, I see.  
 9 Why do you say it was important that she gave clear  
 10 direction about that, rather than using the word "may"?  
 11 A. Because honestly, reading it here now with you, I don't  
 12 actually know what she means.  
 13 Q. Okay.  
 14 Now, omissions, I want to deal with that topic now.  
 15 You have highlighted a number of omissions in the  
 16 existing fire safety strategy, and I want to take you to  
 17 some examples of points where you say that items were  
 18 missing.  
 19 If we can start at page 129 {BLARP20000017/129} of  
 20 your report. I want to look this time at the box at  
 21 3.3.2 on the left-hand side. Ms Cooney has described  
 22 existing arrangements for means of escape from levels 1  
 23 to 2. I'm not going to read it all out. That's what  
 24 she has done in those paragraphs.  
 25 At section 10 of your table on the right-hand side,

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1 if we can now skip to the right, in the final paragraph  
 2 of that box, box 10, you have said:  
 3 "The existing fire safety strategy does not identify  
 4 if the means of escape provisions are suitable to  
 5 satisfy the requirements of Article 14 of [the  
 6 2005 Order]. Therefore, this section does not assist  
 7 the responsible person insofar as no practical guidance  
 8 is provided."  
 9 Now, can you just help us as to what more you think  
 10 Ms Cooney should have done and said about the RRO  
 11 specifically in that instance?  
 12 A. Well, it's more that I would like to have read her  
 13 professional opinion that it was sufficient or not for  
 14 means of escape from the existing building.  
 15 Q. Yes.  
 16 A. And then relate that on. So I don't mean listing out,  
 17 you know, text from the RRO. It's more: are her  
 18 observations or is her text -- it's gone again.  
 19 Q. Let's go back to her text and put it on the left-hand  
 20 side, 3.3.2 in box 10.  
 21 A. Yes.  
 22 Q. She is describing the escape in the first paragraph.  
 23 Then she is talking about the boxing club's capacity.  
 24 A. Yes. So this --  
 25 Q. Then she is saying there is an open void, and then at

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1 the end of that, escape can be made away from the void  
 2 without having to pass within 4.5 metres of the opening.  
 3 A. I think I would expect then some professional statement  
 4 saying, "and this is sufficient because", or, you know,  
 5 "It's acceptable to leave it this way", or just some  
 6 concluding remark, so it's clear there isn't any other  
 7 action or any other fire safety measure required.  
 8 Q. Do you think there might have been reason to believe  
 9 that the existing arrangements weren't satisfactory for  
 10 the purpose of the RRO?  
 11 A. In the boxing club? That's not something I've looked  
 12 at.  
 13 Q. At that level, okay.  
 14 A. No, I haven't thought about it that deeply.  
 15 Q. I understand.  
 16 Then if we look at paragraph --  
 17 A. Sorry, I probably should say --  
 18 Q. Yes.  
 19 A. So you can't look at just one particular thing and make  
 20 a big conclusion about the RRO.  
 21 Q. Yes.  
 22 A. Okay? In Grenfell Tower at that time, the smoke control  
 23 system was not operating as it should, it was  
 24 a high-rise residential building with mixed use, the  
 25 fire doors we've talked about a lot in Phase 1, there

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1 was all sorts of complexity that needed to be considered  
 2 when producing the existing fire strategy.  
 3 Q. Yes.  
 4 A. It's not fair for me here to just point at this one  
 5 particular sentence.  
 6 Q. No, I understand.  
 7 If we look below this on that same page right there,  
 8 we can see box 11 below is "Internal layouts - Level 4",  
 9 and she deals with that issue in the paragraphs there.  
 10 If we could go down the page so we can see the whole of  
 11 that box. Yes.  
 12 So she is talking about level 4 contains the office  
 13 accommodation, no access to the stair or lift in the  
 14 central core, assumed that AFD is present in the  
 15 entrance lobby, and then in the second paragraph:  
 16 "If the accommodation communicates with the fire  
 17 fighting shaft/ lifts, then the core in this area should  
 18 be protected to 2 hours ... and 1 hour fire doors ...  
 19 single escape route from the building ... the exit  
 20 should be lobbied to provide a minimum of 30 minutes  
 21 fire resisting construction and there should be no  
 22 combustible materials ..."  
 23 So she is discussing level 4 and the requirements  
 24 there.  
 25 Then she says in relation to travel distances in the

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1 last paragraph:  
 2 "Travel distances, as the layout offers escape in  
 3 more than one direction back to the entrance lobby,  
 4 provided the lobby is adequately protected, this would  
 5 be satisfactory."  
 6 Then if we go across the page to look in section 11  
 7 of your table, where you're addressing this, in the  
 8 third paragraph down within that box, you say:  
 9 "Exova do not identify if the escape arrangements  
 10 comply with ADB 2010. They simply describe the  
 11 arrangement without providing specifics such as existing  
 12 travel distances."  
 13 Do you see that there?  
 14 A. Yes, yes.  
 15 Q. Now, the point I'm asked to put to you is: would the  
 16 travel distances have been apparent from the drawings?  
 17 So would someone have been able to work out, based on  
 18 the drawings, what the travel distances were?  
 19 A. Do you mean that Cate Cooney could work it out or the  
 20 reader of the report --  
 21 Q. I think the reader of the report.  
 22 A. -- would now take out drawings and a ruler and mark it  
 23 for themselves?  
 24 Q. Yes.  
 25 A. I think I would expect the drawings to have been marked

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1 up to support the point being made, which is some kind  
 2 of narrative, I think, around the Approved Document B,  
 3 rather than an explanation of her views on the existing  
 4 building.  
 5 Q. I see.  
 6 A. So personally I think that it should not be down to the  
 7 reader of the report, because that could be all  
 8 different types of people with different types of  
 9 competency, that they would now need to take out  
 10 drawings and do the work themselves again. No, I don't  
 11 think that's reasonable.  
 12 Q. Is her conclusion, though -- she says it's subject to  
 13 adequate lobby ventilation, with the ability to escape  
 14 in multiple directions, the travel distance is  
 15 acceptable. Were those conclusions a legitimate one for  
 16 her to have reached?  
 17 A. In the context of that one paragraph of the report,  
 18 I have to keep saying what I'm saying all along: I can't  
 19 say that one particular sentence is adequate when I've  
 20 explained what the conditions of Grenfell Tower were at  
 21 that time.  
 22 Q. Right, okay.  
 23 If we can just go over the page to see what else you  
 24 say over the page at page 130 {BLARP20000017/130}, you  
 25 say at the end of that box:

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1 "To summarise, Section 3.3.3 of that Existing  
 2 Building Fire Safety Strategy does not confirm the  
 3 existing fire safety provisions or what additional  
 4 measures should be provided to allow the responsible  
 5 person to fulfil their duties under the [RRO]."  
 6 Do you see that there?  
 7 A. Yes.  
 8 Q. Can you just help us, why was that information for the  
 9 responsible person under the RRO so important to be  
 10 recorded in the existing strategy?  
 11 A. Because they said in their scope of work that's what  
 12 they were going to do.  
 13 Q. Right, I see.  
 14 If we can now look at page 336 {BLARP20000017/336}  
 15 of your report and look at paragraphs 14.1.22 to 24. So  
 16 right at the bottom of that page, you say here:  
 17 "The second major failing with the existing building  
 18 fire strategy was that it failed to communicate to the  
 19 KCTMO what actions they were required to take, as  
 20 a result of the existing building condition at that  
 21 time, as they were required to under the RR(FS)O 2005.  
 22 "Existing conditions such as the status of the lifts  
 23 in event of fire, the condition of the flat entrance and  
 24 stair fire doors, and the absence of an active lobby  
 25 smoke control system, particularly required KCTMO's

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1 attention and even required mitigation measures from  
 2 them at that time.  
 3 "These matters were not dealt with in the existing  
 4 fire strategy works."  
 5 A. Yes.  
 6 Q. I think you have actually addressed in your evidence  
 7 running up to this point all of those matters. You have  
 8 talked about the lift, the flat entrance doors and the  
 9 smoke control system.  
 10 A. Yes.  
 11 Q. So, just to be clear, those are all matters that, one,  
 12 should have been flagged, you say, in the report.  
 13 A. Yes.  
 14 Q. And then do you actually think it would have been  
 15 necessary for the TMO to take action on the basis of  
 16 that if that had been flagged?  
 17 A. Yes. So now we go into the statutory duty to carry out  
 18 a risk assessment, and if you have a high-rise  
 19 residential building with the stay-put strategy, and  
 20 let's even just say, as a minimum, fire doors to the  
 21 lobby unknown, lift to the lobby unknown, smoke control  
 22 system not working, okay, when you're assessing those  
 23 hazards to the people living in the building, they  
 24 require careful assessment and a decision on: is it  
 25 appropriate to stick with the stay-put strategy? Is

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1 there something else could be done day to day to  
 2 mitigate the risk those lack of performances are  
 3 causing?  
 4 Q. Yes.  
 5 A. That's the whole purpose of the statutory fire risk  
 6 assessment process.  
 7 Q. Yes.  
 8 A. Okay?  
 9 Q. If we can now look at page 147 {BLARP20000017/147} of  
 10 your report, paragraph 5.4.34. I now want to turn to  
 11 a different subtopic, which is the fire risk assessment.  
 12 I know we have touched on this already in general terms.  
 13 You say in 5.4.34:  
 14 "The fire risk assessment provided to Exova from  
 15 KCTMO, dated 29th December 2010, did not include the  
 16 following areas ..."  
 17 And you have listed out a number of areas that it  
 18 didn't include.  
 19 Then you say:  
 20 "I have seen no evidence of Exova requesting the  
 21 fire risk assessments for non-residential areas which  
 22 were excluded from the above risk assessment."  
 23 Then in the next paragraph:  
 24 "As Grenfell Tower was a single staircase  
 25 development, with that stairs shared by all uses, this

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1 was a piece of significant information they required,  
 2 before forming any final opinion."  
 3 A. Yes.  
 4 Q. Then at paragraph 5.4.37 you say:  
 5 "Further, the statutory risk assessment document,  
 6 provided to Exova by KCTMO, did not include the  
 7 'significant findings and action plan' - an important  
 8 outcome of that risk assessment process."  
 9 Now, just pausing there, on that, can you just help  
 10 us as to precisely why the significant findings and  
 11 action plan from a fire risk assessment would be so  
 12 important for the drafter of the existing fire strategy  
 13 to be aware of?  
 14 A. Because that's where you should get to read, you know,  
 15 if there's a problem, it will be fixed in three months,  
 16 you know, three years, "We can't fix it so instead we're  
 17 going to do the following 24 hours a day", something  
 18 like that, and that impacts your assessment of risk when  
 19 concluding on the overall condition of the existing  
 20 building.  
 21 I don't know why that really important piece of  
 22 information was not sent to Exova, because it should  
 23 have been.  
 24 Q. Right, yes.  
 25 Then if we can look at paragraph 5.4.39 on page 147

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1 {BLARP20000017/147}, you say:  
 2 "Exova do not identify within their Existing  
 3 Building Fire Safety Strategy any of the shortcomings or  
 4 assumptions made within the 2010 Fire Risk Assessment  
 5 ... I have found no evidence of Exova receiving the  
 6 significant findings associated with the December 2010  
 7 fire risk assessment, nor asking for them.  
 8 "Exova do not outline the steps they have taken to  
 9 independently satisfy themselves that the content of the  
 10 risk assessment was based on an accurate assessment of  
 11 the condition of Grenfell Tower. I would expect this  
 12 activity from a competent fire safety engineer."  
 13 A. Yes.  
 14 Q. Pausing there, can you just help us, exactly why do you  
 15 think Exova shouldn't have simply taken at face value  
 16 the fire risk assessment? Why do you think it was  
 17 reasonable to go further and obtain the missing  
 18 information or do the independent verification  
 19 themselves?  
 20 A. Okay, so there's lots of questions in that one question.  
 21 Q. Sorry.  
 22 A. Actually I have my notebook, but I'm not allowed to  
 23 write down --  
 24 Q. Let's break it down.  
 25 Why do you think they shouldn't have simply taken

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1 the fire risk assessment at face value?  
 2 A. Okay, yes. So just kind of repeating what I've said  
 3 a few times already, when you do the site survey, when  
 4 you review the plans, when you have reviewed records of  
 5 how things are being maintained, you may realise  
 6 something that the responsible person is either not  
 7 aware of or does not think is important.  
 8 So the existing fire strategy, I see it as a very  
 9 important -- it's almost like an independent audit at  
 10 the time of the existing building, and so if you compare  
 11 your work with the work of the fire risk assessor and  
 12 you observed any differences in opinion or approach on  
 13 what's in the building, again, it would be very  
 14 important that you would raise that.  
 15 What was the other two parts?  
 16 Q. Do you think it was reasonable to go further and obtain  
 17 any missing information themselves?  
 18 A. On the significant action ...?  
 19 Q. Yes, or indeed if the fire risk assessment on its face  
 20 has missing information, like you said you hadn't got  
 21 a fire risk assessment for the boxing club --  
 22 A. Oh, yes, I do.  
 23 Q. -- or other parts of the tower, would you have thought  
 24 it was reasonable for Exova to ask for that further  
 25 information?

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1 A. Yes, I would, because you can't give a robust  
2 professional opinion until you have that information,  
3 and if you never get it, you have to qualify your  
4 professional opinion.  
5 Q. Yes.  
6 A. It's, you know, quite frankly the scary aspect of being  
7 a fire safety engineer.  
8 Q. In your experience, would it ever be reasonable to  
9 assume that a fire risk assessment had been carried out  
10 properly previously?  
11 A. Is it reasonable? Sorry, I actually don't understand.  
12 Q. In your experience, would it ever be reasonable to  
13 simply assume that you have got a proper fire risk  
14 assessment that's been carried out properly?  
15 A. One is hopeful when one gets any document, but when  
16 you've done your own work, if you observe differences or  
17 discrepancies, you have to raise them.  
18 Q. In your experience, have you come across that situation,  
19 where you have been presented with a fire risk  
20 assessment and you have found that, when you have done  
21 the analysis, there's things in it that you have to  
22 raise?  
23 A. Yes, I have, and we have. Yes. And vice versa. A fire  
24 risk assessor may review an existing fire strategy and  
25 say, "Actually, I have also observed something that you

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1 have missed". I see it as -- I don't want to sound as  
2 if it's only Exova. It's on both sides.  
3 Q. Yes.  
4 Now, if we go to page 149 {BLARP20000017/149} of  
5 your report now at table 5-15, here what you have done  
6 is you have, in a table, listed line-by-line each  
7 provision of Approved Document B that was applicable to  
8 the tower, and then you have highlighted in red the ones  
9 that you say weren't addressed in the existing building  
10 fire safety strategy.  
11 We can see you have done that same exercise in  
12 relation to a number of the other pieces of work that  
13 Exova produced, including the refurbishment  
14 fire strategies; that's right, isn't it?  
15 A. Yes.  
16 Q. Can I ask you about your methodology here. Can you  
17 explain why you thought this exercise would be helpful,  
18 to do it this way?  
19 A. I'm just conscious that -- I suppose I feel very  
20 self-conscious that I'm very familiar with all of these  
21 things, and I thought that, you know, if we tried to  
22 compare the work back to the standard number of headings  
23 to try and give some kind of quantum to support some of  
24 the concerns I've raised. I think I was trying to be  
25 transparent and just be a little bit clearer instead of

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1 just giving lots of, you know, opinions.  
2 Q. Yes, I understand.  
3 A. It's got no further significance.  
4 Q. Can I just be clear, though, is it your view that all of  
5 those points ought to have been addressed, or are you  
6 using it as a simple tool to show how much was missing?  
7 A. I'm using it as a simple tool to show what's missing,  
8 and when one isn't going to incorporate a recommendation  
9 or one doesn't think a recommendation is relevant,  
10 sometimes it can also be very important to make clear  
11 why.  
12 Q. Yes.  
13 We can see that you have excluded some sections.  
14 You have got "Not applicable", B3, section 11.  
15 A. Yes.  
16 Q. But are you saying that all of the others would be  
17 relevant in principle?  
18 A. In principle they should be considered.  
19 MS GRANGE: Yes.  
20 Mr Chairman, the next topic that I want to deal with  
21 is not that long, but it is going to be more than just  
22 three minutes.  
23 SIR MARTIN MOORE-BICK: It would be more sensible to stop at  
24 this point, wouldn't it?  
25 MS GRANGE: Yes, please.

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1 SIR MARTIN MOORE-BICK: We will have a break now so we can  
2 all get some lunch, Dr Lane. We will come back at  
3 2 o'clock, please. And once again, please don't discuss  
4 your evidence with anyone outside the room.  
5 THE WITNESS: I won't. Okay. Thank you.  
6 SIR MARTIN MOORE-BICK: Thank you very much.  
7 (Pause)  
8 Good, 2 o'clock, then, please. Thank you.  
9 (1.00 pm)  
10 (The short adjournment)  
11 (2.00 pm)  
12 SIR MARTIN MOORE-BICK: All right, all ready to carry on?  
13 THE WITNESS: Yes, I have brought my glasses so I can read  
14 better.  
15 SIR MARTIN MOORE-BICK: That'll make a lot of difference.  
16 Good.  
17 Yes, Ms Grange.  
18 MS GRANGE: Great, thank you.  
19 I just have a few more questions to ask you relevant  
20 to the existing fire strategy, and then we're going to  
21 move on to the refurbishment work that Exova did.  
22 Can we bring up {EX000001279}. Now, if you recall,  
23 this is an email that you referred to in your report.  
24 It's from Cate Cooney to Andrew Martyn on  
25 17 August 2012. This is an email that we looked at in

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1 detail when Ms Cooney gave evidence. It's where she  
 2 says, towards the end:  
 3 "They are making an existing crap condition worse so  
 4 it's a matter of working the worse bits out and making  
 5 the new stuff work."

6 Do you recall that?

7 A. Yes.

8 Q. You have read that email before?

9 A. Yes.

10 Q. If we go to paragraph 4.9.3 on page 113

11 {BLARP20000017/113} of your report, you refer to that  
 12 email there at 4.9.3, and then if we go on to page 337  
 13 {BLARP20000017/337} of your report, and to a further  
 14 section at 14.1.30, you are referring to that email  
 15 again, and you say:

16 "There is no justification for 'making an existing  
 17 crap condition worse'."

18 Given the strong language employed by Exova  
 19 internally about how they saw the nature of the  
 20 building, in your opinion, do you think it was incumbent  
 21 on them to warn their client and the TMO and the design  
 22 team that the plans for the refurbishment were likely to  
 23 make the existing condition worse?

24 A. Yes, I do.

25 Q. Now, sticking with that page, if we can look earlier at

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1 14.1.26, you say there the email seems to reflect  
 2 a culture regarding the fire safety engineering  
 3 standards of the Exova team.

4 Then at 14.1.27 you say:

5 "I must stress this is not unique. This email  
 6 reflects culture and behaviour I have experienced and  
 7 observed elsewhere in the construction industry through  
 8 my own professional work."

9 A. Yes.

10 Q. Just briefly, can you just explain to us what you mean  
 11 there by that's a culture that you have experienced more  
 12 generally in the industry, what do you mean by that?

13 A. So I think for me fire safety engineering is about  
 14 protecting people.

15 Q. Yes.

16 A. It's a massive responsibility, and I used the word  
 17 "scary" earlier, and I mean that most sincerely. It's  
 18 a massive responsibility. But when you forget that, and  
 19 you get caught up in the game of, you know, making  
 20 things work, getting things through, you forget about  
 21 your primary responsibility, which is protecting people,  
 22 and that has been a problem in the construction  
 23 industry, based on my own experience.

24 Q. Yes.

25 A. And I don't just mean regarding fire safety engineering

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1 professionals, I want to make that clear, because,  
 2 you know, fire safety engineering professionals, we're  
 3 one role player in a whole scheme of people who have  
 4 duties to make things -- ultimately to build things  
 5 properly and, you know, so they're you can even say fit  
 6 for purpose, and so the buildings can be operated  
 7 safely, and the only reason for doing that is to protect  
 8 people in the event of a fire, and they're people in the  
 9 building and the firefighters.

10 Q. Yes, okay, thank you.

11 A. And that ties back to all these other things I have been  
 12 saying earlier about the definition of fire safety  
 13 engineering and getting confused about methodologies,  
 14 you know, so whether you use a prescriptive methodology  
 15 or a performance-based methodology, whether you're  
 16 writing an existing fire strategy or a detailed  
 17 fire strategy, the ultimate purpose is to protect human  
 18 beings.

19 Q. Yes, okay, thank you.

20 On the back of that, would you accept that it is at  
 21 least a part of a fire consultant's role to identify the  
 22 bits of a proposal that would make the compliance  
 23 position worse and work out ways to address them?

24 A. I think that is our job.

25 Q. Yes.

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1 Now, you refer earlier in your report on page 112  
 2 {BLARP20000017/112}, paragraph 4.9.2, to a separate  
 3 email that Ms Cooney sent to Mr Ashton on  
 4 10 September 2012.

5 A. Yes.

6 Q. You say:

7 "... I also note that there was some crossover  
 8 between the teams. Ms Cooney provided commentary back  
 9 to other Exova staff on 2 occasions (presented below)  
 10 regarding the condition of the existing building and  
 11 therefore how the refurbishments may affect fire safety  
 12 in the building."

13 Then if we go over the page {BLARP20000017/113},  
 14 I think we see, at 4.9.5, reference to the 10 September  
 15 email that she sent to Mr Ashton. So we can see you  
 16 have taken that into account in your report.

17 A. Yes.

18 Q. Can I just take you to that email, {EX000000388}.

19 Now, this is her email to Terry Ashton. It's on  
 20 10 September 2012, and she is setting out her thoughts  
 21 on a possible solution to Grenfell Tower:

22 "General fire line mark up attached to clarify ideas  
 23 below."

24 And there are a number of headings, and I'm not  
 25 going to take you through the detail of it, but would

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1 you accept that what Ms Cooney is doing here is  
 2 identifying the worst bits in the proposals and trying  
 3 to find ways in which they could be worked out?  
 4 A. Well, I don't know why -- I don't know the technical  
 5 reasons Cate Cooney had for saying the refurbishment was  
 6 going to make things worse.  
 7 Q. Right.  
 8 A. I don't know that I've read -- I hope I haven't missed  
 9 some correspondence, but I haven't read where she wrote  
 10 down why she said that.  
 11 Q. I see.  
 12 A. Okay?  
 13 Q. Okay.  
 14 A. So I just want -- because I feel the need to just be  
 15 very precise in an Inquiry. So I don't know that this  
 16 list she is sending Terry emanates from things she saw  
 17 in the primary refurbishment that was making the  
 18 situation worse.  
 19 Q. I see, okay.  
 20 A. Okay?  
 21 Q. Perhaps I can just ask: in giving the opinions in your  
 22 report, you have taken into account this correspondence,  
 23 you have seen this email before?  
 24 A. I've seen this email.  
 25 Q. Yes.

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1 A. Okay? But I don't know that this is a list of the  
 2 things that Cate Cooney thought meant the primary  
 3 refurbishment was making things worse. I actually don't  
 4 understand that point at all.  
 5 Q. Okay, I understand.  
 6 A. Okay? So I have read this email, and I see it as her  
 7 giving some advice to Terry Ashton.  
 8 Q. Yes.  
 9 A. I don't know what prompted her to give him that advice.  
 10 Q. Yes.  
 11 A. And I don't know how it relates to her opinion that the  
 12 primary refurbishment was going to make things worse.  
 13 Q. Yes, I understand, okay.  
 14 Now, just on the existing fire safety strategy, your  
 15 conclusions are set out at section 5.7 of your report,  
 16 if we go back to that at page 157 and 158. I showed you  
 17 these before.  
 18 5.7.2 at the bottom {BLARP20000017/158}, you have  
 19 said it's inadequate for any relevant purpose.  
 20 A. Yes.  
 21 Q. Then I think over the page were the other conclusions  
 22 that I showed you earlier.  
 23 I just want to check with you: have any of those  
 24 conclusions changed as a result of the oral evidence you  
 25 have heard from the Exova witnesses, and particularly

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1 Cate Cooney and Dr Clare Barker?  
 2 A. No.  
 3 Q. Okay, the refurbishment work now, I want to discuss that  
 4 with you.  
 5 Before we get to the detail of that, I just want to  
 6 ask you some questions about the RIBA stages of work.  
 7 A. Yes.  
 8 Q. Now, if we look at page 336 {BLARP20000017/336} of your  
 9 report, and I want to look at paragraph 14.1.16, you say  
 10 this:  
 11 "The significant milestone documents any practising  
 12 fire engineer relies upon as a matter of course, such as  
 13 the Stage C, D/E reports by the architect and  
 14 [mechanical and electrical] ..."  
 15 What does MEP stand for?  
 16 A. Mechanical and electrical and plumbing engineer.  
 17 Q. "... were available to them in the exact same way as  
 18 they were for every other member of the design team.  
 19 Yet I have found no evidence those documents were ever  
 20 considered."  
 21 Now, we're going to come back to this paragraph of  
 22 your report later, but sticking with the first words you  
 23 used there about them being significant milestone  
 24 documents, can you explain why you say that?  
 25 A. Yes. So when you're working to the RIBA stages, which

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1 happened at the primary refurbishment, at the end of  
 2 each stage the design team produces -- you can really  
 3 call it a record of what's occurred and what's been done  
 4 in that stage. The fire safety engineer has a very  
 5 important role before those reports are issued because  
 6 of the co-ordination exercise that's needed, the  
 7 updating of the strategy, and so the final version of  
 8 each one of those milestone reports. So there's toing  
 9 and froing so that, at the end of the stage, the  
 10 architects report, the MEP engineer's report and the  
 11 fire safety strategy are aligned and co-ordinated.  
 12 So our strategy reports have to follow that process,  
 13 and also if you haven't had the opportunity to  
 14 participate in them, which you should have, you must  
 15 have read them before you enter the next stage.  
 16 For example, if I was appointed during stage D,  
 17 which might happen, I would ask to read the stage C  
 18 report in full so I could understand the thinking of the  
 19 professional design team.  
 20 Q. I understand.  
 21 In your view, would any reasonably competent fire  
 22 engineer know that these were significant milestone  
 23 documents which were important for them to read on any  
 24 project they were involved with?  
 25 A. Yes.

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1 Q. Are those reports sometimes long? Are they sometimes  
2 lengthy documents?  
3 A. The milestone reports?  
4 Q. Yes, the RIBA, say the stage C report or the stage D  
5 report, are they sometimes long?  
6 A. Yes.  
7 Q. If long, would you still expect a fire engineer to ask  
8 for and read those reports?  
9 A. Yes.  
10 Q. And read the entirety of them?  
11 A. Yes, I would. Yes, I do.  
12 Q. If we go to page 40 {BLARP20000017/40} of your report,  
13 table 3.1, what you have done here -- and this is in  
14 an early section of your report -- is you fit various  
15 parties and the work they did into the different RIBA  
16 stages; yes?  
17 A. Their appointment status.  
18 Q. Yes, I see, I understand.  
19 A. My understanding of their appointment status in each  
20 stage.  
21 Q. For those different stages, I understand.  
22 Is it fair to say that the RIBA stages aren't in  
23 practice always strictly separate stages?  
24 A. In practice? Do you mean C runs into D without a formal  
25 moment, or C and D run in parallel?

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1 Q. Yes, both. Could that happen on projects?  
2 A. I mean, I've worked on projects where they come in very  
3 quick succession.  
4 Q. But is it your evidence that they're always or commonly  
5 distinct stages of the project?  
6 A. There is generally an understanding in the design team  
7 that we are in a distinct stage, yes.  
8 Q. Do you agree that, in a design and build arrangement,  
9 the stage at which a design and build contractor might  
10 vary from possibly quite early, maybe at stage D, or  
11 possibly much later, perhaps stage F?  
12 A. Yes, there is no set rule which of the stages  
13 a contractor may be appointed.  
14 Q. Yes, and I think you yourself in your report acknowledge  
15 that sometimes contractors commence on site as early as  
16 stage D, albeit not in the case of Grenfell.  
17 A. Yes, they may do.  
18 Q. Yes. For the transcript, that's page 34  
19 {BLARP20000017/34}, paragraph 3.2.6 of your report.  
20 Could it be said that the RIBA stages are just  
21 a framework and that what's more important in reviewing  
22 any project is the substance of who was communicating  
23 with whom and when?  
24 A. I genuinely don't understand that question.  
25 Q. I see, okay.

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1 Going back to this table in your report, can you  
2 explain why it's helpful to divide the work into the  
3 RIBA stages in this part of your report?  
4 A. Why is it helpful?  
5 (Pause)  
6 I was just trying to be clear about people's  
7 appointment status.  
8 Q. Yes.  
9 A. And ... yes, sorry, I'm just struggling to -- I don't  
10 really understand. I was just trying to be clear about  
11 the stages particularly Rydon were around on the  
12 project.  
13 Q. Yes.  
14 A. And my understanding of Exova's appointment status  
15 particularly.  
16 Q. Yes.  
17 A. And I was also trying to show, and I think it's relevant  
18 to some of the evidence from Exova, that not every party  
19 was novated to the principal contractor.  
20 Q. Yes. Yes.  
21 Now, in terms of the scope of work for the Grenfell  
22 project, we know it was set by reference to those RIBA  
23 stages of work. Is that a common way of setting the  
24 fire engineer's scope of work?  
25 A. Yes, it is.

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1 Q. To do it by reference to those RIBA stages?  
2 A. If it's a RIBA project, yes.  
3 Q. Yes.  
4 A. It's very common, yes.  
5 Q. Yes. Now --  
6 SIR MARTIN MOORE-BICK: Are we moving away from the table at  
7 3.3.13?  
8 MS GRANGE: Yes, I was about to.  
9 SIR MARTIN MOORE-BICK: Could I just ask a question about  
10 that?  
11 MS GRANGE: Of course, yes.  
12 SIR MARTIN MOORE-BICK: We can see from your table what  
13 I think we probably knew anyway: that Exova were acting  
14 for or under contract to the TMO throughout this period.  
15 A. In my opinion, yes.  
16 SIR MARTIN MOORE-BICK: Some of the witnesses from the TMO  
17 gave evidence which might suggest that they weren't  
18 aware of that. Have you looked at, as it were, the  
19 communications between Exova and the TMO, and if so, do  
20 you have any comment about them?  
21 A. Yes, I heard some of that evidence. I produced a table  
22 in my October version of the report, which hopefully we  
23 might get to, about who the invoices from Exova were  
24 sent to at the TMO, and you might like to look at the  
25 names of those persons.

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1 SIR MARTIN MOORE-BICK: Yes.  
 2 A. And I would hope that if one was receiving an invoice  
 3 and approving it for payment, one might understand that  
 4 one had -- sorry, I --  
 5 SIR MARTIN MOORE-BICK: No, no.  
 6 A. One might understand that one had a fire safety  
 7 engineering company. And the second piece of  
 8 information there in my Exova report, you will see that  
 9 the KCTMO appointed Exova on other projects on their  
 10 estate. So I will leave that with you.  
 11 SIR MARTIN MOORE-BICK: Well, I just wondered whether you  
 12 found it surprising or unsurprising that the  
 13 correspondence between TMO and Exova does not seem to  
 14 have been either fuller or more designed to make the TMO  
 15 clear about exactly what the relationship was.  
 16 A. There is correspondence between Paul Dunkerton and  
 17 Claire Williams with staff at Exova, and there is  
 18 correspondence from Janice Wray to staff at Exova.  
 19 That's what I see.  
 20 SIR MARTIN MOORE-BICK: All right. Thank you.  
 21 Yes, Ms Grange.  
 22 MS GRANGE: Thank you, that's helpful, yes.  
 23 We will come back to that invoices table later.  
 24 A. Okay.  
 25 Q. If we can look at page 46 {BLARP20000017/46} of your

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1 report, at paragraph 3.5.12, this is with reference to  
 2 the Fire Industry Association guide. So when you have  
 3 assessed the adequacy of the scope of works that were  
 4 proposed by Exova, you have benchmarked it against the  
 5 Fire Industry Association guide; is that correct?  
 6 A. Yes.  
 7 Q. You have said there:  
 8 "The key point from each of these stages is that at  
 9 each stage the fire strategy report is expected to be  
 10 updated in line with the design information that is  
 11 current at each stage."  
 12 A. Yes.  
 13 Q. So that's one of the key points we get from that.  
 14 If we could just look at that Fire Industry  
 15 Association guide, if we go to paragraph 3.5.9 on  
 16 page 44 {BLARP20000017/44}, there you have set out for  
 17 RIBA stage C, now known as stage 2, what the FIA guide  
 18 says about what should be undertaken at that stage.  
 19 I just want to focus on the second paragraph there.  
 20 It talks about liaising with the client and design team,  
 21 attend design team meetings, et cetera, "on a basis to  
 22 be agreed specific to the project requirements".  
 23 A. Yes.  
 24 Q. We see similar language about stage D in terms of  
 25 responding to the design documentation and reviewing

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1 that.  
 2 A. Yes.  
 3 Q. Now, in the light of that, it's clearly a two-way  
 4 process, isn't it, as between the design team and the  
 5 fire engineer --  
 6 A. Yes.  
 7 Q. -- in terms of how the works progressed.  
 8 Can you confirm whether in practice it's normal that  
 9 the party leading the design team, so the lead designer,  
 10 is the one that leads in designing how much liaison  
 11 there is with the various consultants and when and in  
 12 what form?  
 13 A. That may be a limit set upon you as a fire safety  
 14 engineer, but where that's not sufficient, I would  
 15 always make it clear -- so, for example, if the lead  
 16 designer said, "We want to meet you once in stage C" --  
 17 Q. Yes.  
 18 A. -- and I had assessed their objectives on the project,  
 19 I might say, "I'm afraid I'm concerned that meeting once  
 20 isn't enough for this project and we would prefer to  
 21 have three formal meetings or two formal meetings".  
 22 Q. Yes.  
 23 A. So, again, depending on the project, there may be limits  
 24 set or there may be a more open quantity of access  
 25 proposed.

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1 Q. Yes.  
 2 A. And the fire safety engineer has to take care that it  
 3 will be sufficient for their own purposes.  
 4 Q. Is it also right that the party leading the design team  
 5 would be "in the driving seat" when it comes to  
 6 information being disseminated to the team?  
 7 A. They will be in the driving seat, but a competent  
 8 fire safety engineer, where they need other information  
 9 or information at a different time, it's important to  
 10 ask and to check if that information isn't forthcoming.  
 11 Q. Yes.  
 12 Now, if we just pull up, just so we can remind  
 13 ourselves of it, the fee proposal for the refurbishment  
 14 work, {EXO000000164}. So here we can see it's dated  
 15 9 May 2012, and you have carefully analysed that  
 16 fee proposal, haven't you, in your report?  
 17 A. Yes.  
 18 Q. Now, just looking at a number of things you said about  
 19 this fee proposal, if we could look at page 73  
 20 {BLARP20000017/73} of your report, paragraph 4.3.113,  
 21 you say there that:  
 22 "The fee proposal also sets out the expectation from  
 23 Exova that they would be carrying out their work once,  
 24 on an agreed set of building layouts. This is not  
 25 realistic in the design development phase, when layouts

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1 can change regularly."

2 A. Yes.

3 Q. So, just to be clear, did you find that surprising in

4 a fee proposal for work of this scale, that it said it

5 would be based on one review of an agreed set of

6 building layouts?

7 A. Yes, it's surprising, but it isn't unusual if someone is

8 haggling with you about your fee. Okay? So you might

9 write a fee proposal and say you wanted to review the

10 plans formally three or four times, and a client may

11 say, "I'm not prepared to pay for that".

12 Q. Yes.

13 A. Where you have, you know, this opportunity to write your

14 own fee proposal and own scope, I would expect

15 fire safety engineers to take the opportunity to maybe

16 suggest more than one plans review in a stage.

17 Q. I see. But isn't it possible that there would be layout

18 changes in the future which might involve significant

19 wasted effort if the fire engineer is reviewing each

20 change of layout, or would you expect that to be part of

21 the role?

22 A. Reviewing each change of layout? Well, you know, any

23 substantial change in layout impacts the fire safety

24 design and it requires attention. You might agree to do

25 a review, for example, in early stage C, and then,

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1 a few weeks before the architect wants to submit their

2 report, agree to do another very detailed check towards

3 the end.

4 Q. Yes. I see.

5 A. Other people might like you to follow them every step of

6 the way. But certainly at the start and, you know,

7 before the stage C drawings are finalised, a detailed

8 review is needed.

9 Q. Yes, I see.

10 Now, stage C of the fee proposal, you are critical

11 of Exova's scope of work for RIBA stage C, and if we can

12 look at page 64 {BLARP20000017/64} and what you say from

13 4.3.58 and following.

14 So you have compared it with the Fire Industry

15 Association guide, and you say there in the first line

16 it doesn't address some important items. I want to pick

17 you what you say next. You say:

18 "And in particular Exova's scope fails to address

19 the most important life safety duty which was to

20 identify the relevant statutory controls. This is a

21 serious omission from the scope of work.

22 "Instead, their focus was on items that will bring

23 cost 'impact' to the project or would 'affect' a 'future

24 application' under the Building Regulations 2010."

25 A. Yes.

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1 Q. Then you say:

2 "Neither of these are clear about life safety goals

3 but appear instead to be relevant to commercial

4 consequences for their client only."

5 So that's what you have said there.

6 You also conclude at paragraphs 4.3.62, so below

7 that quote and following, the scope also doesn't

8 identify a compliance check of the design at stage C;

9 that's correct, isn't it?

10 A. Yes.

11 Q. You say at 4.3.65, at the bottom of that page:

12 "It is therefore reasonable for me to conclude that

13 life safety was not communicated effectively as the

14 primary consideration within the scope of work for

15 stage C."

16 You see that there?

17 A. Yes.

18 Q. Now, I just want to take you back to certain parts of

19 the fee proposal. If we go to page 2 of it -- so

20 {EX000000164/2} -- at the top of that page, so just

21 before you get to RIBA stage C, in the second paragraph

22 under "Proposed Scope of Work", it says there:

23 "The aim of the fire safety work would be to ensure

24 a high standard of fire and life safety for the

25 occupants of the building whilst highlighting any areas

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1 of the building's design that may represent an approvals

2 risk."

3 Do you see that there?

4 A. Yes.

5 Q. Then reading on in that paragraph, it then says:

6 "Additionally, we will recommend ways to resolve

7 these issues, to ensure that the fire and life safety

8 objectives are achieved in the most cost-effective way

9 possible and make sure that the fire strategy does not

10 compromise the architectural concept for the design."

11 A. Yes.

12 Q. Now, I also want to show you another passage from this

13 fee proposal letter. If we look on page 3

14 {EX000000164/3}, in the final paragraph under "Stage F",

15 there it says:

16 "It should be noted that the paramount objective of

17 the Building Regulations is the life safety of persons

18 within and around the building during a fire and any

19 fire fighters attending a fire incident. Property

20 protection is not specifically covered by the

21 Building Regulations ..."

22 Now, if we then go back to paragraph 4.3.58 on

23 page 64 {BLARP20000017/64}, this is where you're dealing

24 with stage C. You say in the second line:

25 "... in particular Exova's scope fails to address

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1 the most important life safety duty which was to  
 2 identify the relevant statutory controls."

3 Now, first, can you give me an example of what you  
 4 mean by statutory controls there?

5 A. Yes, so can you put the fee proposal back up on screen,  
 6 please?

7 Q. Yes.

8 A. I mean, I think, as you know, I acknowledge in the other  
 9 stages that they are very clear about the Building  
 10 Regulations and the other stages. This is a review of  
 11 stage C in isolation.

12 Q. Yes.

13 A. You have asked me to contemplate it now, in your very  
 14 large question, in the round.

15 Q. Yes.

16 If we bring the fee proposal back up, that's at  
 17 {EX000000164/2}, the stage C part, so if we focus on  
 18 that in the middle of that page.

19 Is what you are saying that you are critical of this  
 20 particular section of stage C?

21 A. Just -- well, I shouldn't say "just". The language  
 22 there, yes.

23 Q. I see.

24 A. And I'm very clear later on that they do refer to life  
 25 safety. I have made that point later in the other --

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1 Q. Yes, so that's one of the key points I want to put to  
 2 you: do you agree that the passages I've taken you to  
 3 elsewhere in the letter do expressly refer to the  
 4 paramount importance of life safety?

5 A. Which I have already explained in my report I had seen,  
 6 yes.

7 Q. But going back to your criticism about it fails to  
 8 address the most important life safety duty, which was  
 9 to identify the relevant statutory controls, can we just  
 10 focus on that point.

11 A. Yes.

12 Q. Why do you say that identifying the statutory controls  
 13 was perhaps the most important life safety duty relevant  
 14 to RIBA stage C?

15 A. Well, I just see language around cost and approval risk,  
 16 not language about compliance with, you know, the  
 17 control mechanism. I don't know where this question has  
 18 come from, but I think it's overstating the intention of  
 19 my words.

20 So in that first paragraph, I see an offer to focus  
 21 on approval risk and cost impact --

22 Q. Yes.

23 A. -- not compliance.

24 Q. I see.

25 A. That's all I meant.

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1 Q. But there is reference in there to focusing on future  
 2 issues that would either have an effect under the  
 3 Building Regulations 2010 --

4 A. No, it says an effect on a future application --

5 Q. Yes.

6 A. -- under the building regs.

7 Q. Wouldn't it be implicit within that that those Building  
 8 Regulations are part and parcel of providing for life  
 9 safety? Would that not be implicit.

10 A. Yes, it could be implicit. Yes, it could.

11 Q. Yes.

12 A. But I see the language of approval risk and cost.

13 Q. Yes.

14 A. And I saw those words more.

15 Q. I see. Okay.

16 Would it be normal for clients to have their own  
 17 objectives for any project, like design function,  
 18 improvements to facilities, appearance and economics?

19 A. Yes.

20 Q. And provided that they're always subordinate to the  
 21 paramount objective of life safety, would you expect  
 22 consultants to try and accommodate those client  
 23 objectives?

24 A. Yes.

25 Q. Would you also accept that, subject to life safety being

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1 the paramount objective, there is nothing wrong with  
 2 trying to achieve those objectives in a cost-effective  
 3 way?

4 A. I do agree with that, yes.

5 Q. Just going back to your words that you had used in  
 6 4.3.59 of your report, you had said:

7 "Instead, their focus was on items that will bring  
 8 cost 'impact' ... or would 'affect' a 'future  
 9 application' under the Building Regulations ..."

10 A. Yes.

11 Q. Given that Exova state expressly elsewhere in the  
 12 proposal that their paramount objective is life safety,  
 13 would you accept that you should perhaps modify that  
 14 opinion?

15 A. I hope that I give my opinion as I go through each  
 16 stage.

17 Q. I see.

18 A. And I try to be clear at each stage why I'm saying what  
 19 I'm saying, and then at the end of my review of each  
 20 strategy, I give a final opinion.

21 Q. Yes.

22 A. And I hope when we get to stage D and on, you will see  
 23 that I acknowledge exactly what Exova said about life  
 24 safety in those other places.

25 Q. Would you agree that the one, ie cost impact, does not

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1 necessarily exclude the other, ie life safety?  
 2 A. Yes, can we just go back to Exova's words, because these  
 3 questions reflect a slightly different reading of the  
 4 situation.  
 5 Q. Yes, so that's what they said, there's their proposal  
 6 for stage C {EXO00000164/2}.  
 7 A. Yes. Yes. So what it actually says is the work would  
 8 focus on issues that would either affect an application  
 9 or have significant cost impact.  
 10 Q. Yes. So those are the words that you're particularly  
 11 relying on --  
 12 A. Yes. So, based on things I've seen, I would worry what  
 13 the meaning of "significant cost impact" is.  
 14 Q. Yes.  
 15 A. And I think when one is going to raise costs, it's  
 16 important, you know, to state there where -- because  
 17 I think this is the only stage where they deal with cost  
 18 impact, actually, but we'll move on. You know, it would  
 19 be important to reflect and remind people that, in that  
 20 work, as you have just asked me, it's cost in  
 21 conjunction with meeting the life safety goals.  
 22 Q. I see, okay.  
 23 A. Okay?  
 24 Q. Now, in relation to RIBA stage D/E, which is dealt with  
 25 at the bottom of that page, you say in your report that

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1 the fee proposal doesn't explicitly allow for Exova to  
 2 review the documentation prepared by other design team  
 3 members, and you identify that to be a material  
 4 omission. Is that correct?  
 5 A. Yes.  
 6 Q. Yes.  
 7 A. Yes.  
 8 Q. Can we just look at what you say about that at page 66  
 9 {BLARP20000017/66} of your report, and paragraph 4.3.74.  
 10 So you are just dealing with that point. You have set  
 11 out what the Fire Industry Association states in the  
 12 paragraph above about reviewing the design documentation  
 13 provided by others, and then you say this:  
 14 "This is relevant because the lack of such a review  
 15 from a competent fire safety engineer, increases the  
 16 chance of the building design breaching the requirements  
 17 of the fire strategy, and therefore, the functional  
 18 requirements with respect to fire safety, of the  
 19 Building Regulations."  
 20 How unusual is it in your experience for there to be  
 21 such an omission in a scope of works which covers RIBA  
 22 stages D and E?  
 23 A. You're asking me to comment on other people's work,  
 24 outside the work I'm doing on Grenfell.  
 25 Q. I see.

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1 A. And I just haven't drawn that into here.  
 2 Q. Okay.  
 3 A. Are you asking me if I think other fire safety  
 4 consultants, not just Exova, offer to write a strategy  
 5 without reviewing documentation? I'm afraid to answer  
 6 the wrong question.  
 7 Q. Let's come at it in a different way.  
 8 I think you have answered earlier that that Fire  
 9 Industry Association guide was good industry practice at  
 10 the time; is that right?  
 11 A. Yes.  
 12 Q. So it would be good industry practice to have, as part  
 13 of the review at stage D, that review of the design  
 14 documentation; is that correct?  
 15 A. Yes, it is, because you have to check that the  
 16 principles you have agreed during stage C are being  
 17 transferred and translated in more detail during  
 18 stage D. There's more drawings, there's more  
 19 information, there's more detail. So I think if there  
 20 was any other fire safety engineering company offered to  
 21 write a stage D report without reviewing the plans, yes,  
 22 I would say the same thing.  
 23 Q. Yes. Okay.  
 24 Now, stage F, if we go back to stage F of Exova's  
 25 fee proposal, this is {EXO00000164/3} this time. Here

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1 we can see in the first and second paragraphs it says:  
 2 "During this stage of work, we would assist the  
 3 design team and appointed contractor for the development  
 4 in addressing the fire safety issues that appeared  
 5 during the tender review phase. This work is likely to  
 6 result in further adjustments to the fire safety  
 7 strategies approved during RIBA Stages D/E.  
 8 "This work would ensure that the fire safety  
 9 strategy for the development followed the requirements  
 10 of The Building Regulations 2010. Any agreed revisions  
 11 to the fire safety strategy would be fully documented  
 12 and submitted to the building control authority in order  
 13 to achieve regulatory approval."  
 14 Then they have set out what the scope of work for  
 15 that stage would include, and then we see the line:  
 16 "Completion of this scope of services will occur  
 17 once all the above-mentioned goals are accomplished."  
 18 Do you see that there?  
 19 A. Mm.  
 20 Q. Then on fees, in the middle of page 4 {EXO00000164/4},  
 21 we get how the fees are broken down. We see what's said  
 22 for RIBA stages C, D and E there, and then it said this  
 23 immediately under that:  
 24 "It is proposed that charges for work carried out  
 25 during RIBA Stage F will be charged at our standard

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1 hourly rates. A time-basis charge has been proposed  
 2 during this stage due to the difficulty in determining  
 3 the extent of work required during this stage."  
 4 Now, do you agree that this document, taken alone,  
 5 appears to envisage Exova continuing to work on the  
 6 project after the appointment of the contractor?  
 7 A. Yes.  
 8 Q. Just help us as to what might happen to a fire engineer  
 9 in a design and build situation when a main contractor  
 10 comes on board. Is it right that you have said in your  
 11 report that a number of things could happen at that  
 12 point?  
 13 A. Yes.  
 14 Q. First of all, they could stay client-side and carry on  
 15 being appointed by the client to advise the client; is  
 16 that correct?  
 17 A. Yes, that's correct.  
 18 Q. Or they might be novated to the design and build  
 19 contractor; is that right?  
 20 A. Yes.  
 21 Q. Or possibly their work might be terminated; is that  
 22 correct?  
 23 A. That's correct.  
 24 Q. As I understand it, you have experience of all of those  
 25 things --

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1 A. Yes, I have.  
 2 Q. -- in your professional expertise?  
 3 A. Yes.  
 4 Q. Now, you have mentioned the fact that this was -- you  
 5 talked about self-instruction. How commonplace would it  
 6 have been, in your experience, for a fire engineer to  
 7 develop their own scope of works, as opposed to having  
 8 maybe a member of the design team suggesting to them the  
 9 scope of works at this time?  
 10 A. Oh, the design team suggesting --  
 11 Q. Well, another party or the client suggesting a scope of  
 12 works. How common was it to develop your own scope of  
 13 work as a fire engineer?  
 14 A. It's common. For certain clients they -- you know,  
 15 rather than setting out a scope that you are to read and  
 16 comply with and respond to, you draft up your own scope.  
 17 So it's perfectly common.  
 18 Q. Yes.  
 19 A. Yes.  
 20 Q. Can we now look at what you say at page 70  
 21 {BLARP20000017/70} of your report, paragraph 4.3.95.  
 22 You say this:  
 23 "Additionally, the fee proposal includes no text  
 24 confirming Exova would wait for specific instructions  
 25 from their Client before proceeding from stage to stage,

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1 as more typically occurs on projects. They provide  
 2 their own requirement to move from Stage to Stage."  
 3 Do you see that there?  
 4 A. No, where are you reading from?  
 5 Q. Oh, sorry, I'm sorry, 4.3.95.  
 6 A. Oh, sorry, yes.  
 7 Q. So you say:  
 8 "... the fee proposal includes no text confirming  
 9 Exova would wait for specific instructions from their  
 10 Client before proceeding from stage to stage ..."  
 11 A. Yes. Yes.  
 12 Q. Now, can you just help us with that: just to be clear,  
 13 are you saying, based on your own experience, that it  
 14 would be typical for a fire engineer's scope of works to  
 15 expressly state that the fire engineer should wait for  
 16 instructions from the client before proceeding from  
 17 stage to stage?  
 18 A. Yes, I think, again, this is more commercial risk  
 19 management rather than technical risk management. So  
 20 when you finished your -- like, when you write your  
 21 fee proposal, you would say, "Review the plans X number  
 22 of times, attend X number of meetings", and when we have  
 23 agreed our report is a final stage D report, we would  
 24 exchange some kind of communication to agree D was  
 25 completed and E was to start.

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1 Because sometimes a project may go on hold between D  
 2 and E, for example, or the architect may say, "We would  
 3 like you to hold for two months and then we would like  
 4 you to commence your stage E works".  
 5 So we manage our commercial risk by reaching those  
 6 agreements explicitly before we move on, you know, we  
 7 don't just keep going.  
 8 Q. Yes, I understand.  
 9 In reality, isn't it the case that the decision to  
 10 move from one RIBA stage to the next rests with the  
 11 ultimate client?  
 12 A. In reality? Rests with the client ... do you mean  
 13 that ... sorry, again, I just don't understand that  
 14 question, because if I've agreed with, you know, the  
 15 architect, and they're representing the client, that  
 16 it's time that we moved to stage E, that is reality.  
 17 Q. I see.  
 18 A. Yes.  
 19 Q. Regulation 38 now on the fee proposal.  
 20 If you go to page 72 of your report  
 21 {BLARP20000017/72}, paragraph 4.3.108, this is in the  
 22 context of a discussion about regulation 38, and you say  
 23 this there:  
 24 "Omitting this from the part of their scope of work  
 25 specifically identified as being in support of the

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1 principal contractor was a major omission. This is  
 2 because the principal contractor needed to comply with  
 3 Regulation 38 at Grenfell Tower, not just Schedule 1  
 4 Part B [of the Building Regulations]; and the fire  
 5 strategy needed to make the additional requirements to  
 6 comply clear at this Stage F.”  
 7 A. Yes.  
 8 Q. Now, we know that regulation 38 of the Building  
 9 Regulations -- we have got a whole separate report from  
 10 you on that -- deals with the handing over of fire  
 11 safety information by the person carrying out the works;  
 12 that's right, isn't it?  
 13 A. Yes.  
 14 Q. And it's right that that would include the fire safety  
 15 information relating to the design and construction of  
 16 the building, the services, its fittings and equipment  
 17 that will assist with the safe operation and management  
 18 of the building?  
 19 A. Yes, yes.  
 20 Q. And that had to be handed over no later than the  
 21 completion of the work; is that correct?  
 22 A. Yes, yes.  
 23 Q. So would that correspond with RIBA stage K, completion  
 24 of the work?  
 25 A. Potentially, yes.

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1 Q. Why do you consider that it would have been reasonable  
 2 to have expected Exova to address regulation 38 when any  
 3 handover was due to be at the end of the project?  
 4 A. So I think, as a reputable fire safety engineering  
 5 company, they should raise the duty for others to comply  
 6 with regulation 38, regardless of when that's going to  
 7 happen. I think your question might be about timing.  
 8 Q. Yes.  
 9 A. So I'm being clear that the fire safety engineer must  
 10 make the parties aware of their duty to comply with  
 11 regulation 38.  
 12 Q. Yes.  
 13 A. And when you're writing a fee proposal, particularly  
 14 where you're offering to assist the contractor, I would  
 15 expect a fire safety engineer to make clear that's  
 16 a looming issue for them.  
 17 Q. Yes.  
 18 A. It's nothing more than that.  
 19 Q. I see. Yes.  
 20 A. Yes.  
 21 Q. So even though Exova's fee proposal only goes to  
 22 stage F, you still maintain that that was a material  
 23 omission not to mention regulation 38?  
 24 A. So my reading of the English under stage F is that it  
 25 doesn't actually align with what happens in stage F. It

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1 actually appears to be more like a stage K set of  
 2 activities .  
 3 Q. I see.  
 4 A. If one is advising any contractor, you know, beyond  
 5 stage E, it's important to raise this looming issue for  
 6 them.  
 7 Q. Yes. I see.  
 8 Does the fact that there was no specific request for  
 9 help from Exova about regulation 38 at any stage affect  
 10 your opinion about whether or not you think it was  
 11 implicit that they ought to deal with that?  
 12 A. So helping to comply with regulation 38 and raising it  
 13 as a compliance issue are two very different things.  
 14 Q. Yes.  
 15 A. So the fire safety engineer would only have some  
 16 specific pieces of information relevant to  
 17 regulation 38.  
 18 Q. I see.  
 19 A. So I'm not hoping that the readers of this text think  
 20 I'm saying that Exova had the responsibility to fully  
 21 comply with regulation 38, because that's not what  
 22 I mean. They had a duty to raise it because, together  
 23 with part B, they were the relevant fire safety  
 24 compliance objectives.  
 25 Q. Yes.

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1 A. It relies on a lot of other people to get to that state.  
 2 Q. Yes.  
 3 Now, level of fees in the refurbishment proposal.  
 4 A. Yes.  
 5 Q. At page 74 {BLARP20000017/74} of your report, if we go  
 6 to that, paragraph 4.3.122, you have analysed the fees,  
 7 you have broken down those fees based on the hourly  
 8 rates that Exova were charging at the time --  
 9 A. Yes.  
 10 Q. -- and you have concluded that they were, in your  
 11 opinion:  
 12 "... wholly inadequate to provide sufficient  
 13 resources for the primary refurbishment project; but  
 14 particularly allowed very little time to produce  
 15 a detailed fire strategy for the purposes of achieving  
 16 statutory approval as they offered in their scope of  
 17 work."  
 18 A. Yes.  
 19 Q. Now, you have said the fees were "wholly inadequate".  
 20 A. Yes.  
 21 Q. I mean, can you give us an approximate ballpark estimate  
 22 of what the fees ought to have been? We know that they  
 23 were £3,300 for stage C and £5,300 for stage D/E?  
 24 A. And how many days' work, approximately, was the --  
 25 Q. So that broke down into around four days of Mr Ashton's

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1 time at stage C, and around six and a half to seven days  
 2 of his time at stages D and E. So if it's easier in  
 3 time, you could tell us how long.  
 4 A. So, you know, it's not -- you know, I don't actually --  
 5 okay, so I think that to do a detailed fire safety  
 6 strategy for a building like Grenfell Tower, which  
 7 had -- as far as I'm concerned, it actually had quite  
 8 a lot of complexity. I've heard others say that it was  
 9 a simple building. I don't actually think that it was.  
 10 I would expect, with the meetings, the exchanges by  
 11 email, reviewing even one set of architectural drawings  
 12 very thoroughly, and then setting out the level of  
 13 detail required in a stage E report, just for stage E  
 14 I would expect it to be maybe ten-plus days. That's  
 15 at E.  
 16 Q. Yes. Yes, that's helpful, thank you.  
 17 A. Yes.  
 18 Q. So I now want to look at each of the outline fire safety  
 19 strategies that were produced for the refurbishment.  
 20 Let's go to issue 1 dated 31 October 2012,  
 21 {EX000000519}. We can see the date there on the first  
 22 page, and if we go to the second page {EX000000519/2} we  
 23 can see it's prepared by Mr Ashton and reviewed by  
 24 Mr McEleney there; do you see that there?  
 25 A. Yes.

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1 Q. We see on page 4 {EX000000519/4} that we get  
 2 a description of the refurbishment in the introduction,  
 3 which sets out what the refurbishment comprises. But,  
 4 as Mr Ashton accepted, although he knew that the  
 5 building was to be overlaid at this point, he omitted  
 6 overcladding from this description of the refurbishment  
 7 works.  
 8 Now, I just want to look at what you have said about  
 9 this in your report. If we go to page 187  
 10 {BLARP20000017/187} and look at paragraph 6.5.5, you say  
 11 it:  
 12 "... fails to identify if it applies to the whole  
 13 building or only those parts which form part of Exova's  
 14 understanding of the 2012-2016 primary refurbishment  
 15 works. The four drawings Mr Ashton refers to in  
 16 Issue 01 ... provide proposed floor plans for all levels  
 17 of Grenfell Tower, except basement ..."  
 18 Then you say in the next paragraph:  
 19 "However, it does describe the existing single stair  
 20 serving level 4 and above, as well as the existing smoke  
 21 control ventilation. Further, it makes provision for  
 22 emergency lighting, and the performance criteria for new  
 23 wall and ceiling linings, but not limited just to the  
 24 lower four levels ..."  
 25 So I think what you are saying there is the content

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1 of what it's dealing with is more than just the lower  
 2 floors; it's dealing with the entire building.  
 3 A. Advice in certain parts of the report, if you want,  
 4 strays into other levels.  
 5 Q. Yes.  
 6 A. Or it seems to --  
 7 Q. Yes.  
 8 A. -- refer to other levels, but that's why it's important  
 9 in an existing building being refurbished, one of the  
 10 first things you would explain is where you're going to  
 11 rely on the existing physical condition, where new  
 12 things are being done, old things are being removed.  
 13 It's a very important kind of boundary or basis to  
 14 explain what your advice is based on.  
 15 Q. Yes.  
 16 A. Because it's a mix of things --  
 17 Q. Yes.  
 18 A. -- and a mix of locations, and that clarity is important  
 19 throughout.  
 20 Q. Yes, yes.  
 21 Now, if we keep going down within this section of  
 22 your report, 6.5.7, we will come back to this in  
 23 a moment, exactly what it said about the entire  
 24 overcladding of the external walls.  
 25 Then you say, 6.5.8, it:

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1 "... communicated information related to the entire  
 2 building, and not just the first four levels listed in  
 3 the description of the refurbishment ...  
 4 "Exova did not provide a set of fire strategy  
 5 drawings to accompany Issue 1 of the Outline Fire Safety  
 6 Strategy. Nor was a marked-up set of drawings by others  
 7 provided in the report."  
 8 A. Yes.  
 9 Q. Again, would that be something that you would expect of  
 10 a reasonably competent fire engineer at this time, to  
 11 provide a set of fire strategy drawings accompanying  
 12 that report?  
 13 A. Yes, so some people do their own drawings, you know,  
 14 they take the basic CAD and do their own, and then some  
 15 of us mark up someone else's set of plans to reflect our  
 16 advice. So either what's required or something that  
 17 isn't quite working, something that's missing. And it's  
 18 part of that exchange amongst the professionals.  
 19 Q. Yes.  
 20 Just to be clear, do you think it fell below the  
 21 standards of a reasonably competent fire engineer not to  
 22 include those kind of marked-up drawings?  
 23 A. Yes, because it's very hard, you know, as you can see,  
 24 you can write, you know, the English that was written,  
 25 say, describing the project, now we can judge that, but

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1 if there was a set of plans of every floor at  
2 Grenfell Tower just marking up where the advice has been  
3 given, then that's very clear, isn't it? No  
4 retrospective judgment can be passed because you set it  
5 out very carefully, floor by floor.

6 Q. Yes.

7 Finally then at 6.5.10, you say:

8 "Critically, Exova fails to identify that over  
9 cladding the entire building is a part of the definition  
10 of the refurbishment works in their Report, but of more  
11 grave concern is they still go on to provide their  
12 advice ..."

13 We will come to that in a moment.

14 That's what you say about some critical omissions  
15 from the report; that's right, isn't it?

16 A. Yes.

17 Q. Now, if we go back to the report itself and look at  
18 page 5, so {EXO00000519/5}, here we can see at 2.1 we  
19 get a very high overview of the Building Regulations  
20 2010, and then I want to look at what's said about B3 at  
21 pages 7 to 8. We can see B3 there, and that goes over  
22 into the next page {EXO00000519/8}. There's the end of  
23 B3 at the top there, and then into B4. This is just to  
24 remind everybody what we actually see in this report on  
25 B3 and B4.

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1 Then we've got that familiar phrase under B4:

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

6 Now, you have set out your views about the contents  
7 of the report in considerable detail in your expert  
8 report, and I'm not going to take you through all of  
9 that now.

10 At section 6.5, pages 187 to 189, you summarise your  
11 review of that fire safety report. I want to pick it up  
12 on page 187 {BLARP20000017/187}, paragraph 6.5.10. So  
13 we were just looking at that:

14 "... fails to identify that over cladding is a part  
15 of the ... refurbishment works ..."

16 If we go over the page {BLARP20000017/188}, you say  
17 the grave concern is that:

18 "... they still go on to provide their advice that  
19 this part of the works would have 'no adverse effect'."

20 Then you say in the next paragraph:

21 "Yet the records show the staff at Exova had never  
22 analysed the external wall construction proposals and so  
23 were not in any position to make this statement.

24 I provide more detailed evidence in Section 9."

25 Then you say:

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1 "Therefore, I conclude this was very serious  
2 evidence of professional negligence, from my perspective  
3 as a practising fire engineer."

4 Do you see that there?

5 A. Yes.

6 Q. Now, do those conclusions remain your view having heard  
7 the oral evidence, including of Mr Ashton?

8 A. Yes.

9 Q. Then I want to pick it up at 6.5.17 on that same page  
10 further down. You say this:

11 "Specific to functional requirement B4 External fire  
12 spread, Exova provided no guidance or performance  
13 criteria for the external wall construction."

14 Then you say:

15 "Thus, no performance standard was defined which the  
16 design team could rely upon, nor did Exova indicate to  
17 the design team that the fire performance of the  
18 external wall construction was of any importance."

19 Then you say this:

20 "Therefore, Exova's report is not '... the  
21 creation of a detailed fire strategy for the proposed  
22 development which will be written in line with the  
23 requirements of The Building Regulations 2010' as their  
24 RIBA Stage D scope allowed ... By reference to my  
25 analysis in Table 6-15, the FIA Guide for RIBA Stage C

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1 ... and their own scope, Issue 01 of the Outline Fire  
2 Safety Strategy that was issued at the very end of  
3 Stage C did not contain the level of information  
4 required for a RIBA Stage C Fire Safety Strategy."

5 Do you see that there?

6 A. Yes.

7 Q. Now, just pausing there, in circumstances where Exova  
8 did not have much information at all about the nature of  
9 the overcladding prior to writing this report, and if we  
10 can just put aside for a moment the stage C report which  
11 they were copied in to on the same day that this report  
12 was sent -- so I'm going to take you to RIBA stage C  
13 report in a moment, so leave that aside -- what would  
14 you expect a reasonably competent fire engineer to say  
15 about the B4 requirement in that first report?

16 A. So, first of all, to know the building was being  
17 overclad.

18 Q. Yes.

19 A. And then to set out, at an absolute bare minimum, the  
20 statutory guidance for insulation, cavity barriers, and  
21 the external surface.

22 If you are given no drawings whatsoever about the  
23 overcladding, and that has happened many times, the best  
24 thing left for you to do professionally is to simply  
25 state the statutory guidance minimum requirements.

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1 Q. Yes.

2 A. Okay? So ... yes.

3 Q. What would you say to the point that: well, the  
4 architect -- it's a similar point to the one we talked  
5 about earlier -- can read Approved Document B for  
6 themselves? Is it that difficult for the architect to  
7 look at that guidance and apply it themselves? What's  
8 your answer to that?

9 A. I'm not meant to be putting my grumpy, glarey face on.

10 So it's got nothing to do with what the architect  
11 can read or not. I just honestly don't even understand  
12 why that's being drawn in. The fire safety engineer is  
13 responsible for their work and communicating what they  
14 say they're going to do in their fee proposal, and it's  
15 not for any architect to try to decipher, infer, read  
16 around, you know, work out exactly what another  
17 professional person means. Okay?

18 So the very, very basic thing you can do, either in  
19 the absence of information, or maybe you don't  
20 understand cladding drawings, because you don't feel  
21 competent to read them, is to simply state, "Make sure  
22 you understand the external surface is X, insulation  
23 is Y, cavity barriers are required here". At least then  
24 the other professionals can read that and hopefully  
25 decide to do their job too.

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1 Q. Just to be clear, on cavity barriers, would you be  
2 saying, "They're required around openings as well as  
3 elsewhere in your external wall", would you make that  
4 clear?

5 A. I would, or -- so I would, but as a bare minimum, refer  
6 to the section in Approved Document B. Even if you were  
7 going to say nothing else, at least direct the reader to  
8 the section and say, "You need to work this out".

9 Q. Yes. On the external wall, section 12 of ADB --

10 A. Yes.

11 Q. -- would you be referring them to 12.5 of ADB and the  
12 different routes that ADB suggests in 12.5 to comply?

13 A. In 2012 --

14 Q. Yes.

15 A. -- I may not have got into all the different routes of  
16 compliance.

17 Q. Yes.

18 A. Okay? But, like I said, just as an absolute bare  
19 minimum, making clear the performance of each of the  
20 components, even just that, is better than nothing.

21 Q. Yes.

22 A. Yes.

23 SIR MARTIN MOORE-BICK: Just help me with this, if you can.

24 A. Yes.

25 SIR MARTIN MOORE-BICK: My recollection is that Mr Ashton

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1 told us that he hadn't been given any information about  
2 the proposals for overcladding.

3 A. Yes.

4 SIR MARTIN MOORE-BICK: I'm just wondering whether, in those  
5 circumstances, you would find it acceptable for the fire  
6 engineer to put in the report, "I haven't got any  
7 information, I will deal with this later on when I get  
8 it"?

9 A. Yes.

10 SIR MARTIN MOORE-BICK: Just that, without any reference  
11 to --

12 A. Yes.

13 SIR MARTIN MOORE-BICK: -- the ADB requirements and so on.

14 A. Yes. I agree with that. Because at least that's  
15 a warning sign. Okay? "I don't have any information,  
16 I need information, and then I will give you some  
17 advice".

18 SIR MARTIN MOORE-BICK: Well, now, what happened in this  
19 case was that a provisional view was expressed that it  
20 wouldn't affect B4, or the requirements of B4, but to be  
21 confirmed in a later report. Was that not acceptable?

22 A. I don't understand how you can give a view if you  
23 haven't seen any information.

24 SIR MARTIN MOORE-BICK: But at least it's making it clear  
25 that the view you are giving is only provisional.

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1 A. Could we just put up page --

2 MS GRANGE: Let's go back to the words it uses. If we go  
3 back to {EXO00000519/8}.

4 SIR MARTIN MOORE-BICK: That's it, thank you.

5 A. Yes. So I think it's important to bring in here the  
6 other part of B4, which is to do with fire spread  
7 between buildings, and it was very common to do  
8 numeric -- you know, to do analysis for that part.

9 MS GRANGE: That's space separation.

10 A. Space separation.

11 Q. That's dealt with in section 13 of ADB; is that right?

12 A. Yes. Now, I can imagine if you had a quick look at the  
13 site layout, saw where Grenfell Tower was located, I can  
14 imagine writing then, "The proposed changes will have no  
15 adverse effect on the building in relation to external  
16 fire spread", because that is external fire spread.

17 SIR MARTIN MOORE-BICK: Yes.

18 A. So you're happy that things look sufficiently far away  
19 that you're not worried.

20 I don't agree that, without understanding  
21 overcladding, you could immediately assume it would have  
22 no adverse effect without information for that part of  
23 B4.

24 SIR MARTIN MOORE-BICK: So effectively you are saying this  
25 comment deals with space separation under B4, but is

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1 completely silent about spread of flame over surface?  
 2 Is that the point?  
 3 A. That is -- so Mr Ashton has to speak for himself. My  
 4 experience and the focus at that time of professionals  
 5 was very much on space separation and those  
 6 calculations. Those calculations were very common and  
 7 getting more advanced as well. So, based on my  
 8 experience, and just reading it this way, I would  
 9 immediately assume it was about space separation, not  
 10 about section 12.  
 11 SIR MARTIN MOORE-BICK: Spread of flame over the surface?  
 12 A. Spread of flame through the external wall construction.  
 13 That's what I would say, based on my experience of many  
 14 years.  
 15 SIR MARTIN MOORE-BICK: Right. So you would read this, as  
 16 we've just discussed --  
 17 A. Yes.  
 18 SIR MARTIN MOORE-BICK: -- dealing with space separation --  
 19 A. Yes.  
 20 SIR MARTIN MOORE-BICK: -- rather than spread of flame over  
 21 the surface.  
 22 A. Yes, I would, yes.  
 23 SIR MARTIN MOORE-BICK: That would mean that this paragraph  
 24 says nothing about spread of flame over surface.  
 25 A. Yes, that would be correct.

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1 SIR MARTIN MOORE-BICK: Is that a serious omission, or is it  
 2 just, well, neutral? I ask because you're quite  
 3 critical about this passage, and I think we need to  
 4 understand.  
 5 A. No, I am, okay. I think it is a serious omission  
 6 because, in an overcladding project, in any overcladding  
 7 project, you're adding materials to an existing  
 8 building, and so what those materials will do in a fire,  
 9 for both the rules, if you will, section 12 and  
 10 section 13, are, can I say, equally important. One is  
 11 not more important than the other; both must be looked  
 12 at.  
 13 SIR MARTIN MOORE-BICK: All right.  
 14 A. Okay?  
 15 SIR MARTIN MOORE-BICK: Yes, thank you.  
 16 MS GRANGE: Yes, that's really helpful. Yes, thank you.  
 17 Now, the stage C report, the RIBA stage C report,  
 18 you have noted in your report that, on the same day that  
 19 Exova send its issue 1 of the outline fire safety  
 20 strategy, they sent that in the afternoon, in fact  
 21 earlier that day at 11.38 in the morning, Exova had been  
 22 copied in on an email sending a link to the Studio E  
 23 stage C report.  
 24 What I want to do is just go to that email where  
 25 Mr Ashton's copied in. That's at {EXO00001575}.

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1 It's the second email down on this page, so it's  
 2 from Adrian Jess at Studio E. It's sent to David Hale,  
 3 Alun Dawson at Appleyards, and then Mark Anderson,  
 4 Paul Dunkerton of the TMO, and cc'd into it are a number  
 5 of other professionals, including Chris Churchman,  
 6 that's the landscape architects; Andrew McQuatt,  
 7 Max Fordham; others from Max Fordham; Curtins, the  
 8 structural engineers; Chweecheen Lim from Artelia;  
 9 Terry Ashton, Exova; someone from Syntegra;  
 10 Marc Watterson, Taylor Young, that's the planning  
 11 consultants.  
 12 Adrian Jess says:  
 13 "All,  
 14 "Please find attached the studio e ftp location for  
 15 the Stage C report."  
 16 So a link is being sent to the Studio E stage C  
 17 report. Then he asks a couple of individuals some  
 18 questions below, you can see he asks Mark -- I think  
 19 that's Mark Anderson -- and then David/Alun/Mark he  
 20 asks, and if we go over the page {EXO00001575/2} just to  
 21 see the end of that email, he asks those individuals:  
 22 "Can you give me a steer ..."  
 23 Okay?  
 24 So he is copied into that email, action points are  
 25 identified for others, no action points are identified

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1 in the text of the email for Exova.  
 2 Now, in spite of that, would you expect a reasonably  
 3 competent fire engineer to download and read that  
 4 stage C report if sent this email?  
 5 A. Can you just go back to the main page, please?  
 6 Q. Yes.  
 7 A. So if my stage C report wasn't finished as it should  
 8 have been, and it should have been included within the  
 9 main stage C report, that's the normal practice.  
 10 Q. You mean Exova's own stage C report?  
 11 A. Yes, sorry, I was trying to not be ...  
 12 Q. Yes.  
 13 A. So Exova were responsible for producing the stage C  
 14 fire strategy.  
 15 Q. Yes.  
 16 A. It should have been ready on time, co-ordinated and  
 17 issued with all the other stage C reports. That is  
 18 normal, bare minimum professional practice.  
 19 Q. Yes.  
 20 A. If for some reason they were running late --  
 21 Q. Yes.  
 22 A. -- and they received everyone else's stage C report ...  
 23 would I expect them? I would hope that they would check  
 24 it to see if there was any other information they needed  
 25 to finalise their report.

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1 Q. Yes.  
 2 A. If they didn't do that, when they went to start their  
 3 next level of reporting --  
 4 Q. Yes.  
 5 A. -- I would absolutely be of the view they needed to open  
 6 the link then.  
 7 Q. Yes. So just to be clear, at some point on this  
 8 project, whether that day --  
 9 A. Or later.  
 10 Q. -- or, if not possible, later, you are clear that  
 11 a reasonably competent fire engineer --  
 12 A. Yes.  
 13 Q. -- would read that stage C report in full?  
 14 A. In full, or do a word search for relevant fire safety  
 15 points if you don't want to read the whole thing, but  
 16 look at it to understand what the point of the project  
 17 is and what the proposals from all the other  
 18 professionals are, because they impact the advice you  
 19 are giving.  
 20 And I just -- you said there were no actions for  
 21 Exova.  
 22 "If the Stage C report is acceptable can you please  
 23 sign off on the current layouts ... we would note that  
 24 coordination work on stage D is likely to be limited  
 25 until the stage C layouts have been approved."

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1 If I read that, I now know I'm entering stage D, and  
 2 it's time -- you know, Exova have their scope of work,  
 3 they've set out what they're going to do. That is their  
 4 signal that, once these plans are approved, it's time to  
 5 move to the next level of detail as well. So that email  
 6 is important for two reasons.  
 7 Q. Does the absence of any direct instruction for Exova to  
 8 review and analyse this report affect what you would  
 9 have expected of Exova?  
 10 A. No.  
 11 Q. Just to be clear, you're aware that they're only cc'd  
 12 into this email?  
 13 A. That makes no difference whatsoever. There's other  
 14 people cc'd too.  
 15 Q. Stage C we know is the concept stage within the RIBA  
 16 stages. Would it be fair to say that, at that point,  
 17 proposals are often at a high-level stage?  
 18 A. Yes, by definition, yes.  
 19 Q. Would you expect that that stage C report and  
 20 information might be subject to change?  
 21 A. Absolutely. That's why you have to co-ordinate the  
 22 whole way through all the stages.  
 23 Q. Would it be reasonable to expect Exova to analyse the  
 24 information in the stage C report given that the  
 25 information might later change?

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1 A. They needed to analyse the information in the report to  
 2 make sure their own work was accurate.  
 3 Q. Yes.  
 4 Now, can we look at that stage C report now,  
 5 {MAX00000445}. It was a report that was substantial.  
 6 It was 186 pages in its entirety.  
 7 A. Yes.  
 8 Q. In your opinion, should a reasonably competent fire  
 9 engineer have been able to find their way around such  
 10 a document --  
 11 A. Yes.  
 12 Q. -- to be able to extract the key information they needed  
 13 to be aware of?  
 14 A. Yes. Are we allowed to put the table of contents up  
 15 instead?  
 16 Q. Yes, I was going to take you to a number of key things  
 17 within it.  
 18 A. Okay, sorry.  
 19 Q. Perhaps if I can do that and then we can always go back  
 20 to the table of contents if you need it.  
 21 If we can start on page 27 {MAX00000445/27}, that  
 22 stage C report included a section on the overcladding  
 23 proposals.  
 24 A. Yes.  
 25 Q. That was headed "Design Approach: Over Cladding".

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1 Then over on page 28 {MAX00000445/28}, it said in  
 2 the middle of that page that at that point it was a zinc  
 3 composite rainscreen cladding proposed to the upper  
 4 levels. Do you see that there?  
 5 A. Yes.  
 6 Q. We have got a number of images, and then the advantages  
 7 of zinc are set out.  
 8 A. Yes.  
 9 Q. If we go to page 31 {MAX00000445/31}, we can see that we  
 10 have plan sections on that page showing overcladding  
 11 incorporating composite zinc cladding and a section at  
 12 the side; yes?  
 13 A. Yes.  
 14 Q. And at the bottom.  
 15 Then at 32 {MAX00000445/32}, we can see that  
 16 isometric sketch at the top is showing that there is  
 17 going to be insulation behind the rainscreen cladding as  
 18 one of the layers that's going on to the building; yes?  
 19 A. Yes.  
 20 Q. Various cladding options are also considered at the  
 21 bottom of that page, including -- we see rainscreen zinc  
 22 on the right-hand side, but we have also got rainscreen  
 23 aluminium there towards the middle of the page.  
 24 A. Yes.  
 25 Q. Do you see that?

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1 A. Yes.  
 2 Q. Then on page 82 {MAX00000445/82}, so later in the  
 3 report, it incorporates the Max Fordham stage C report,  
 4 and at the heading 4.0 we have a heading for insulation.  
 5 A. Yes.  
 6 Q. On that page, you see the insulation is named in that  
 7 table on the right-hand side, "Insulation (New,  
 8 Celotex FR5000)".  
 9 A. Yes.  
 10 Q. So we actually know here, although we don't know the  
 11 exact product in terms of zinc rainscreen or other type  
 12 of rainscreen, we do have a product for the insulation;  
 13 yes?  
 14 A. Yes.  
 15 Q. Indeed, on the next page, page 83 {MAX00000445/83},  
 16 under the heading "Glazing Infill Panel", we have the  
 17 Celotex insulation mentioned again.  
 18 A. Yes.  
 19 Q. In fact twice there.  
 20 A. Yes.  
 21 Q. Now, I've taken you to those parts of the report where  
 22 we see information about the overcladding.  
 23 Would you have expected a reasonably competent fire  
 24 engineer to have picked out all that information from  
 25 this report?

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1 A. I think the minimum I would expect a fire engineer in  
 2 that year to notice was some type of surface, some type  
 3 of insulation being applied on every storey, and nothing  
 4 further.  
 5 Q. Okay. I see.  
 6 Do you agree that this stage C report makes clear  
 7 the scope of the refurbishment project, including the  
 8 extent of the proposed works to insulate and overclad  
 9 the building?  
 10 A. Yes, so I think that's where you realise the scale of  
 11 the overcladding as a minimum.  
 12 Q. Yes.  
 13 A. Yes.  
 14 Q. Do you agree that it also contains some specific  
 15 information about what was proposed, including the  
 16 specific type of insulation and possible outer cladding  
 17 options?  
 18 A. Yes.  
 19 Q. Should that information have fed directly into the B3  
 20 and B4 analysis that Exova then did in the fire safety  
 21 strategies?  
 22 A. So by detailed fire safety strategy stage ... well, by  
 23 the time they came to do the detailed fire safety  
 24 strategy, they -- I'm not sure what you're asking.  
 25 I think, again, the minimum would have been: the

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1 building is being overclad on every storey, some  
 2 materials are fixed, some materials are not yet fixed,  
 3 here are the performances, is a minimum.  
 4 Q. Yes.  
 5 A. Before the Grenfell fire, no, I would not have expected  
 6 them to take any further step regarding satisfying  
 7 themselves about products.  
 8 Q. I see.  
 9 A. I want to be absolutely clear on that.  
 10 Q. Yes, yes.  
 11 A. But recognising the scale and that it's a surface and  
 12 insulation --  
 13 Q. Yes.  
 14 A. -- I would expect all of us and Exova to recognise them.  
 15 Q. Yes.  
 16 Now, at the point that they get the stage C report,  
 17 they're just about to issue issue 1 of their outline  
 18 fire safety strategy.  
 19 A. Yes.  
 20 Q. It doesn't look like anyone comes back to them and says,  
 21 "Oh, by the way, we've done our stage C report, can you  
 22 now produce a new version in the light of what the other  
 23 reports say". Does that make a difference to your  
 24 opinion, that they weren't asked immediately to go back  
 25 and have another go?

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1 A. Sorry, when is it that -- do you mean that day when --  
 2 Q. Yes, nothing comes. When Exova then later that day send  
 3 their report --  
 4 A. Yes.  
 5 Q. -- nobody comes back to them in the following few days  
 6 and says, "Well, hang on a minute, we've now done our  
 7 stage C report, you obviously haven't taken it into  
 8 account, please now do that".  
 9 A. So I don't know what was going on behind the scenes,  
 10 you know, on the project, so all I can say is I don't  
 11 understand why the fire strategy went out after  
 12 everybody else's information, and equally I don't  
 13 understand why that wasn't raised by anybody else. So  
 14 I can't offer anything else.  
 15 MS GRANGE: Yes.  
 16 Mr Chairman, I think that's a good moment for  
 17 a break.  
 18 SIR MARTIN MOORE-BICK: Good idea, yes.  
 19 We're going to take a break now, Dr Lane, so we will  
 20 come back at 3.35, please.  
 21 THE WITNESS: Yes.  
 22 SIR MARTIN MOORE-BICK: The usual injunction: no talking  
 23 about your evidence while you're away, please.  
 24 THE WITNESS: I won't. Okay, thank you.  
 25 SIR MARTIN MOORE-BICK: Thank you very much.

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1 (Pause)  
 2 Right, 3.35, please. Thank you.  
 3 (3.20 pm)  
 4 (A short break)  
 5 (3.35 pm)  
 6 SIR MARTIN MOORE-BICK: All right, ready to carry on?  
 7 THE WITNESS: Yes, I am.  
 8 SIR MARTIN MOORE-BICK: Good. Thank you very much.  
 9 Yes, Ms Grange.  
 10 MS GRANGE: Thank you.  
 11 Now, you have mentioned a couple of times a question  
 12 about the timing of Exova's work, given when its first  
 13 issue of its outline strategy is arriving compared with  
 14 the stage C report.  
 15 Can we just look at what you say about that in your  
 16 written report. If we go to page 100  
 17 {BLARP20000017/100}, paragraph 4.7.97, you say:  
 18 "As I identify in Table 4-3, Max Fordham first  
 19 issued their Stage C report to the design team for  
 20 comment on the 9th September [2012], with the final  
 21 issue of that report occurring on the 10th October 2012.  
 22 As Exova did not issue their Stage C report until  
 23 substantially after others in the design team, there was  
 24 no time provided for other consultants on the design  
 25 team to adequately understand the implications of the

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1 fire strategy on their own design works before all of  
 2 the stage C reports were issued."  
 3 Then you say:  
 4 "Additionally, the Stage C report that was issued by  
 5 Studio E on the 31st October 2012 was disclosed by Max  
 6 Fordham [then you give the references]. This report  
 7 contains the stage C reports of Max Fordham, Studio E  
 8 and Curtins. The formal Stage C report only contains  
 9 the Design Note issued by Exova on the 12th September  
 10 2012. As I make clear in Section 6, this initial Design  
 11 Note was issued as an interim measure by Exova and  
 12 knowingly only addresses Parts B1 and B5 of the Building  
 13 Regulations. It is silent on Parts B2 to B4."  
 14 Then you say:  
 15 "Therefore, Exova issued their Stage C information  
 16 too late for it to be incorporated into the formal  
 17 reporting package for RIBA Stage C for the primary  
 18 refurbishment project."  
 19 So that's your written evidence on that.  
 20 Can you just expand on why it's so important for any  
 21 work on the fire strategy to be delivered in good time  
 22 to allow others to digest that work?  
 23 A. Because it impacts their decision-making and the  
 24 detailing -- the work that they have to do. They need  
 25 to understand the basic objectives of the fire safety

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1 strategy, and then their designs enable -- Max Fordham,  
 2 Studio E, everyone, their proposals have to enable that.  
 3 That's why it's good practice to have the fire safety  
 4 strategy reports out earlier so everyone can  
 5 co-ordinate, understand, critique, comment, go back and  
 6 look at their own work, and the fire safety engineer  
 7 maybe has to go back and make some changes too.  
 8 Q. Yes, I follow.  
 9 A. Yes.  
 10 Q. Now, issue 2 of the outline fire safety strategy comes  
 11 almost a year later, on 24 October 2013. I now want to  
 12 move forward to look at that.  
 13 Just in terms of what had happened by that stage, we  
 14 know that in August 2013 Studio E issue their stage D  
 15 RIBA report, stage D being design development of the  
 16 RIBA stages. But what we see is that, when that report  
 17 is issued, Exova are not even copied in to that email,  
 18 so as far as we can tell on the documents, they're never  
 19 either directly sent or indirectly sent a copy of the  
 20 stage D report.  
 21 Now, in those circumstances, in circumstances where  
 22 Exova were not sent the stage D report by Studio E,  
 23 would you expect Exova to request that report from  
 24 Studio E or from its client, the TMO?  
 25 A. Once they started their work again and started to

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1 prepare their next version of the fire safety strategy,  
 2 I would expect them to ask what information was now  
 3 available and what stage the design -- you know, how  
 4 developed the design was, and I would imagine the quick  
 5 reply would be, "Please read the stage D report and then  
 6 we'll have a discussion about what's needed next".  
 7 Q. Just to be clear, would you expect a reasonably  
 8 competent fire engineer to ask for and then read the  
 9 stage D report?  
 10 A. I would expect them to ask for it if they didn't have it  
 11 and they were about to start a stage E fire safety  
 12 strategy, and to use it as a reference guide, so go in  
 13 and check the sections that were relevant.  
 14 Q. If you had not been provided with certain information  
 15 that you felt you needed in order to prepare the next  
 16 iteration of a fire safety strategy, what would you have  
 17 reasonably expected a fire safety engineer to do?  
 18 A. To ask for the information they needed.  
 19 Q. And how proactive would you expect a reasonably  
 20 competent fire safety engineer to be in getting hold of  
 21 the information that it needed for its fire strategy  
 22 reports?  
 23 A. How proactive? Reasonably. Reasonably proactive. You  
 24 know, when Studio E contacted them for the next version  
 25 of the fire safety strategy, the stage D report had gone

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1 out. I don't have all my dates written in front of me  
2 here, but the stage D report had gone out, so they were  
3 in stage E. So if I'm contacted in stage E, it's  
4 detailed fire safety strategy time, so I need to know  
5 where the proposals are becoming final and the level of  
6 detail being finalised by all the other professionals,  
7 so I can factor that in to the advice I'm going to give  
8 and what I'm going to record in the fire safety  
9 strategy.

10 So you have to be as proactive as you need to be to  
11 get the information you require.

12 Q. We heard a number of times during Mr Ashton's oral  
13 evidence that he was assuming that if he had to consider  
14 something, he was expecting a direct request of him by  
15 the architects to get him to look at a particular aspect  
16 of the works.

17 Now, is that your opinion of how a reasonably  
18 competent fire engineer should operate on a project like  
19 this?

20 A. No.

21 Q. Can you help us as to why that approach, in your view,  
22 isn't good enough?

23 A. So the evidence shows that Mr Ashton answered questions  
24 when he was asked.

25 Q. Yes.

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1 A. If your scope of work is to produce a detailed fire  
2 safety strategy, the only way you can do that is to ask  
3 for drawings, ask for information, talk to other people  
4 about where their proposals are.

5 Q. Would you expect that a fire safety engineer might need  
6 to educate other members of the team about exactly what  
7 information they would need on a project?

8 A. Well, I don't know about -- they can educate if they  
9 want, but they need to be clear what they need and why,  
10 so the other professionals can help them. But this  
11 team, Max Fordham, Studio E, particularly, have  
12 experience in RIBA stages and the information needed.

13 Q. Let's go to the outline fire safety strategy number 2,  
14 {EXO00000430}. We can see there it's dated  
15 24 October 2013, and we can see on page 2  
16 {EXO00000430/2} that Mr Ashton has prepared it, and this  
17 time Dr Tony Pearson has reviewed it. Do you see that  
18 there?

19 A. Yes.

20 Q. Then page 4 {EXO00000430/4}, we see from the  
21 introduction there's still no reference to the  
22 overcladding in this description.

23 Just to be clear, is it your evidence that,  
24 certainly by this time -- I think you said by the first  
25 iteration, but in this iteration -- overcladding should

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1 have been mentioned at this point?

2 A. Yes, this was an overcladding project, so the  
3 fire safety engineer needed to record that in their  
4 reports.

5 Q. Then what we see on page 8 {EXO00000430/8}, where we see  
6 the B3 and the B4 sections together, is that these  
7 sections were both unchanged --

8 A. Yes.

9 Q. -- a year later, and it contains exactly the same  
10 statement there for B4 under 3.1.4.

11 Now, can you help us: in your view, how should Exova  
12 have addressed the B4 issue if they felt they still had  
13 limited information as to the proposed changes to the  
14 exterior?

15 A. Yes. So if they had checked the stage C report, they  
16 knew the overcladding was extensive, so just scale, and  
17 now we're into detailed fire safety strategy time, which  
18 means it could be the final record of the detailed  
19 design proposals by the design team.

20 So, again, as an absolute bare minimum, I would  
21 expect to see now -- there's two parts of B4, remember,  
22 so space separation dealt with, with analysis if needed,  
23 with a drawing, and section 12 regarding the  
24 construction of the external wall, bare minimum, writing  
25 down the minimum performance requirements for each of

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1 the layers. So that's bare minimum, not bringing in any  
2 post-Grenfell levels of detail.

3 Q. I see.

4 We know that by this time, if they have read the  
5 stage C report, they're aware of the proposed  
6 insulation.

7 A. Yes.

8 Q. Would you expect any kind of analysis of materials by  
9 this stage?

10 A. So in that year -- we're in 2013 now -- I don't know  
11 what analysis of the materials is implied by the English  
12 there. Okay? I'm not going to say I think they should  
13 have automatically read up about Celotex, because I know  
14 that wasn't very common practice at the time. Okay?  
15 That's why I'm just keeping on saying: writing down the  
16 recommendations or the requirements in Approved  
17 Document B is the bare minimum.

18 Q. Yes.

19 A. Okay?

20 Q. Just to be clear, would that have flagged up clearly  
21 that, under 12.7 of Approved Document B, any insulation  
22 material --

23 A. Yes.

24 Q. -- needed to be of limited combustibility?

25 A. Yes, that's correct. So just that statement is the

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1 minimum piece of professional guidance I would expect  
 2 written down in the fire strategy.  
 3 SIR MARTIN MOORE-BICK: If the fire engineer had seen from  
 4 the stage C or stage D reports that the insulation  
 5 proposed was Celotex, you say he couldn't be expected to  
 6 investigate the properties of Celotex.  
 7 A. Yes, I --  
 8 SIR MARTIN MOORE-BICK: Then who would one expect to  
 9 investigate the properties of Celotex if not the fire  
 10 engineer?  
 11 A. Yes, so I don't want to say couldn't be expected;  
 12 I said, you know, I can imagine it not happening.  
 13 SIR MARTIN MOORE-BICK: Well, I think we have to understand  
 14 where whether something could or couldn't have been  
 15 expected means whether a reasonably competent person in  
 16 that position would have done something.  
 17 So the question is whether a reasonably competent  
 18 fire engineer would, first, have noticed the proposed  
 19 use of Celotex and, secondly, would have taken the  
 20 trouble to find out what were the properties of Celotex.  
 21 A. Yes. By 2013 --  
 22 SIR MARTIN MOORE-BICK: Yes.  
 23 A. -- there was sufficient concern in the profession about  
 24 the description of insulation being, you know,  
 25 categorised as class 0 rather than being required to be

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1 a material of limited combustibility. The minimum I'd  
 2 expect is that written down, and if one had noticed  
 3 Celotex in the stage C report, it would have been  
 4 an extra step at that time to explore what that meant.  
 5 Some professionals would have done it; some  
 6 professionals would not.  
 7 SIR MARTIN MOORE-BICK: I'm sorry to press on this, when you  
 8 refer to some professionals, in each case do you mean  
 9 some reasonably competent professionals would and some  
 10 reasonably competent professionals would not?  
 11 A. Yes, I do.  
 12 SIR MARTIN MOORE-BICK: Thank you.  
 13 MS GRANGE: Yes.  
 14 SIR MARTIN MOORE-BICK: Although I have to say that still  
 15 leaves me wondering who could be expected to do that.  
 16 A. Well, at the moment I'm giving my advice in 2013 and  
 17 they're doing their report. Later, when a very specific  
 18 matter arises around the datasheet and the  
 19 cavity barriers, I will give you a different opinion.  
 20 MS GRANGE: Yes, so I think you are talking there about  
 21 when, in September 2014, Mr Ashton is asked questions  
 22 and sent the Celotex datasheet.  
 23 A. Yes, so you will hear me say different things. So I'm  
 24 just trying to live in the moment --  
 25 SIR MARTIN MOORE-BICK: Yes, that's all right.

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1 A. -- as a professional at that time. All I think is fair  
 2 to say is that they would set out the performance  
 3 requirements, and then others would have given a view on  
 4 any product, including Celotex, and other chartered fire  
 5 engineers or competent professionals would not at this  
 6 stage.  
 7 MS GRANGE: Yes. I think what you're describing is that  
 8 what you reasonably expect from fire engineers at this  
 9 time is evolving as knowledge is evolving over these  
 10 years.  
 11 A. Exactly. Yes, because things are now changing rapidly  
 12 in the background.  
 13 Q. Yes.  
 14 A. Okay? So that's why I don't want to bring future events  
 15 to here, and I'm not talking about anything after  
 16 Grenfell.  
 17 So in the background, things are changing rapidly.  
 18 There are some major fires, there is known concern in  
 19 the industry about how insulation is being categorised  
 20 and discussed, and things are changing.  
 21 Q. Yes. Is one of those changes BR 135, third edition,  
 22 which has a number of warnings in it, for example about  
 23 the proliferation of combustible materials being used on  
 24 high-rise buildings?  
 25 A. What date is the third edition?

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1 Q. 2013.  
 2 A. Yes, exactly, so then, but I'm not sure if that was the  
 3 first time -- sorry, I'd need to get them all out if  
 4 I was in the office, but I think that was always quite  
 5 clear, wasn't it, the other versions?  
 6 Q. There's a very specific warning in the third edition  
 7 that a lot of new materials are coming on to the market  
 8 that are combustible and need particular care.  
 9 A. Yes, yes, and I think, you know, for a top-tier  
 10 consultancy such as Exova, and also the very unique and  
 11 specialised experience their company had around testing,  
 12 I have to assume they too were aware of how rapidly  
 13 things were changing around us at that time. It was  
 14 a very complex time --  
 15 Q. Yes.  
 16 A. -- 2013/14/15.  
 17 Q. You referred to that background in terms of what was  
 18 making people much more aware --  
 19 A. Exactly.  
 20 Q. -- of the dangers. You have referred to other cladding  
 21 fires; were those international cladding fires or  
 22 domestic ones?  
 23 A. I think -- again, I wish I had all my dates, but I think  
 24 I'm mostly thinking about international fires, I have to  
 25 say.

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1 Q. Yes, yes. And anything else that sticks out for you in  
2 terms of why people were becoming more aware at this  
3 point of this issue?

4 (Pause)

5 A. There were lots of overcladding projects.

6 Q. Yes.

7 A. And there was other drivers to use insulation on  
8 new-build projects, and my experiences quite frequently  
9 in 2013 was this whole issue of contractors and other  
10 parties almost, you know, beseeching, me, saying, "But  
11 this document says it's class 0 and therefore it's  
12 acceptable", and I was involved in very many  
13 conversations, even on our own projects at Arup, trying  
14 to explain the performance of insulation. Okay?

15 So that was the backdrop.

16 I'm still not going to say the bare minimum from  
17 Mr Ashton was to take out the Celotex brochure or get  
18 some reports. I'm still not going to say that at this  
19 moment in time.

20 Q. Yes, I understand.

21 Now, if we just look at page 341 {BLARP20000017/341}  
22 of your report, paragraph 14.1.75 and following, you say  
23 there:

24 "It was Exova's primary failing to have omitted  
25 B4(1) and to have said that 'this will be confirmed by

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1 an analysis in a future issue of this report' without  
2 ever returning to that topic."

3 Then you say:

4 "But it is also important to acknowledge that no  
5 member of the design team, or the statutory authorities  
6 raised any concerns about the information missing in the  
7 fire strategy regarding B4 ...

8 "Nor indeed did they identify any other aspect of  
9 the missing information to support Schedule 1 Part B  
10 either, when they were provided with the fire strategy  
11 or at any other time."

12 So you make those points clear there.

13 A. Yes.

14 Q. I just want to take you to a number of points made in  
15 Exova's opening submissions. Some of them are topics we  
16 have touched on already, but I want to put them directly  
17 to you so you can respond.

18 If we go to Exova's opening, this is  
19 {EX000001774/12} to start with. Paragraph 4.3, it is  
20 said there that:

21 "Building Regulations and Approved Document B, and  
22 the basic approach that they take, are the bread and  
23 butter of the British construction industry.  
24 Construction companies need no specialist advice to be  
25 aware of them; nor, likewise, do those involved in

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1 designing cladding systems need to be pointed towards  
2 the provisions relevant specifically to external fire  
3 spread."

4 So I touched on this point earlier with you but  
5 I wanted you to see, and we'll take you to another few  
6 paragraphs, how this type of point is put by Exova.

7 What is your response to that as a justification for  
8 why spelling out the performance requirements would have  
9 been pointless?

10 A. It's no justification, in my mind, because Exova wrote  
11 a scope of work, offered a detailed fire safety  
12 strategy, were appointed to do so, and B4 is one of five  
13 significant requirements, and it required information to  
14 be provided. I don't understand -- who gets to decide  
15 which parts of the Building Regulations are so either  
16 irrelevant or well known by others you don't even need  
17 to mention them in a detailed fire safety strategy? So  
18 I don't agree that that is a valid justification  
19 whatsoever.

20 Q. Then if we go on at page 30 {EX000001774/30} of this  
21 document at paragraph 6.3, (A) and (B), again, this is  
22 directly in response to your criticism that the report  
23 ought to have set out the required performance to comply  
24 with B4. They make the point in (A) that:

25 "The audience for Exova's advice at the point of

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1 issue comprised expert architects who evidently ought to  
2 have been familiar with the requirements of Building  
3 Regulations and the guidance contained in the Approved  
4 Documents: and who evidently considered that they had  
5 sufficient expertise to set out detailed provisions in  
6 the Employer's Requirements without seeking further  
7 specialist input."

8 I have already touched on that point with you about  
9 architects, but what is your response?

10 A. I'm very sorry to read something like that, I have to  
11 say, but it isn't an acceptable enough reason as to why  
12 nothing at all was written about either part of B4 in  
13 a competent fire safety engineering company's fire  
14 safety strategy. I will just be saying the same thing  
15 over and over again.

16 Q. (B) they say:

17 "Those who might have referred to Exova's advice  
18 later were an experienced D&B contractor, Rydon, and  
19 a specialist cladding contractor, Harley, neither of  
20 whom will have needed simply to be pointed to  
21 Building Regulations."

22 A. Yes. Again, as the evidence shows, that was also  
23 incorrect.

24 Q. Yes.

25 A. Because Harley asked some questions later, and they

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1 needed to be answered, and they were not.  
 2 Q. Yes.  
 3 In your experience at the time, did organisations  
 4 like Rydon, or specialist cladding contractors like  
 5 Harley or similar, require advice from fire engineers to  
 6 help them understand, for example, section 12 of ADB as  
 7 it applied to their project? Did you have experience of  
 8 that?  
 9 A. My experience is that principal contractors and  
 10 specialist cladding contractors needed assistance in  
 11 understanding, you know, what the fire safety  
 12 requirements were when they were going on to do their  
 13 part of the job, which is, you know, the really detailed  
 14 piece of work about materials, how they're pieced  
 15 together, their location. So it is my experience that  
 16 they needed some help, and I think ... yes.  
 17 Q. Yes.  
 18 Within this paragraph, they then say:  
 19 "If all that Exova was required to do for this  
 20 audience was to remind or repeat the performance  
 21 requirements set out in the Building Regulations, of  
 22 which they were individually and collectively well  
 23 aware, then such a requirement was redundant."  
 24 Now, just breaking that down, it will be a matter  
 25 for the Chairman and panel to consider whether or not

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1 those organisations in fact were individually and  
 2 collectively well aware of the requirements of the  
 3 Building Regulations, but what's your response to  
 4 whether it would be redundant?  
 5 A. I mean, if all the professionals on the design team were  
 6 well aware of the Building Regulations, it doesn't kind  
 7 of counterbalance or remove the duty Exova had when they  
 8 offered -- they offered a detailed fire safety strategy,  
 9 and so a detailed fire safety strategy needed to be  
 10 provided.  
 11 I would like if we can come back to these points  
 12 here --  
 13 Q. Yes.  
 14 A. -- when we have got to the end of my evidence about what  
 15 happened in 2014 and 2015, I think, and the guidance  
 16 that was given to Rydon and Harley.  
 17 Q. Okay, I understand.  
 18 Now, you have touched on the state of knowledge at  
 19 this time.  
 20 A. Yes.  
 21 Q. We have been discussing that, about the state of  
 22 a reasonably competent fire engineer's knowledge at this  
 23 time. Would you have expected a reasonably competent  
 24 fire engineer to have been aware of international  
 25 cladding fires at the time they were working on the

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1 Grenfell project?  
 2 A. Yes, I would, and particularly a company like Exova, who  
 3 operate in different countries and have testing labs, as  
 4 I understand things, in different countries. They're in  
 5 quite a unique position.  
 6 Q. Would you have expected a reasonably competent fire  
 7 engineer to have been familiar with industry guidance,  
 8 including, say, BR 135, or the BCA, Building Control  
 9 Alliance, guidance, or the CWCT guidance?  
 10 A. Yes, so BR 135, remember, is written into Approved  
 11 Document B.  
 12 Q. Yes.  
 13 A. Yes. The BCA guidance -- I mean, I don't know if you're  
 14 asking me to comment on this as a result of --  
 15 Q. No, I'm asking you in a more freestanding way. So  
 16 obviously the BCA guidance comes out first in June 2014  
 17 and then in 2015.  
 18 A. Yes, and, you know, that reflected some of the disquiet  
 19 being raised at the time. So the BCA guide was issued,  
 20 it was controversial in itself, and I think -- so  
 21 substantial companies like Exova would have known about  
 22 that. They're also quoted in that guidance, so their  
 23 staff must surely have known about it.  
 24 And then the CWCT guidance, I think, to be fair  
 25 there, it would be more likely you would be familiar

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1 with that if you worked in a multidisciplinary company  
 2 rather than a fire safety engineering on its own, but it  
 3 is quoted, you know, it is referenced --  
 4 Q. Yes.  
 5 A. -- quite commonly.  
 6 Q. Would you have expected a reasonably competent fire  
 7 engineer to be aware of and have read the new edition of  
 8 BR 135 that came out in 2013?  
 9 A. Yes.  
 10 Q. Now, if we can go to {EXO00001444}, this is a chain of  
 11 emails between Terry Ashton and Tony Pearson about that  
 12 second issue of the Exova fire safety strategy.  
 13 A. Yes.  
 14 Q. In this chain of emails, Mr Ashton and Dr Pearson  
 15 discuss their different opinions regarding whether the  
 16 shared stair between the residential and the  
 17 non-residential parts of the building should be flagged  
 18 as a deviation from standard guidance. Do you recall  
 19 that?  
 20 A. Yes.  
 21 Q. In the final email at the top of the page, Mr Ashton  
 22 states:  
 23 "Tony  
 24 "I told Mags to send the report out without reading  
 25 what you'd added. Had I been able to read it, I would

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1 not have agreed to the amendment as what you've said  
 2 highlights the non compliance with codified guidance  
 3 but, more importantly, is debatable. Let's hope that  
 4 Paul Hanson doesn't pick up on it.  
 5 "Terry."  
 6 If you recall, what had happened is Dr Pearson had  
 7 peer-reviewed it --  
 8 A. Yes.  
 9 Q. -- and had said he would like to add in some text making  
 10 clear that that was a deviation from, I think, Approved  
 11 Document B; is that correct?  
 12 A. He was right to do that, yes.  
 13 Q. What I want to ask you is, if we go back to your report,  
 14 page 99 [BLARP20000017/99], 4.7.81, you say there:  
 15 "I do not understand why Mr Ashton would hope  
 16 Paul Hanson, a member of RBKC Building Control, would  
 17 not pick up on a rather fundamental breach of the  
 18 Building Regulations.  
 19 "I do not consider this professional behaviour."  
 20 Can you just explain why, in your view, any  
 21 reasonably competent fire engineer would have  
 22 highlighted that departure from the relevant guidance in  
 23 that fire strategy report?  
 24 A. Because, like I said, the detailed fire safety strategy  
 25 is a record of the provisions, why they're there, any

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1 deviations, any residual risks, you know, important  
 2 information to serve as a record about that building and  
 3 the work done to create that fire safety design, so that  
 4 people -- by being transparent and clear, the readers of  
 5 that report -- and there will be all different types for  
 6 all different reasons -- should it impact their  
 7 decision-making, they have the ability to understand  
 8 that and factor it into their decision-making.  
 9 Q. Mr Ashton clearly indicated that he didn't agree with  
 10 the proposed addition. Was that view within the range  
 11 of valid professional opinion at the time, in your view?  
 12 A. I think -- did he say or was a minor or disputable --  
 13 I think --  
 14 Q. Let's go back to the email, [EX000001444]. He said:  
 15 "... I would not have agreed to the amendment as  
 16 what you've said highlights the non compliance with  
 17 codified guidance but, more importantly, is debatable."  
 18 A. Yes, okay, so there's two things --  
 19 Q. Did you think it was a debatable issue?  
 20 A. What may be debatable is the risk to life it causes. He  
 21 agrees that it's a non-compliance. So any deviation or  
 22 non-compliance will either pose a risk to life, or there  
 23 is another mitigation and you are satisfied that, with  
 24 that mitigation, the deviation in itself is acceptable  
 25 on the project because you factored it in to all the

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1 other protection measures that you're proposing.  
 2 Q. Just to be clear, even though the guidance in Approved  
 3 Document B isn't compulsory -- we know they aren't the  
 4 Building Regulations, they're just the practical  
 5 guidance -- is it still your view that the deviation  
 6 from that guidance should have been flagged up?  
 7 A. Yes, so if you offer to write a detailed fire safety  
 8 strategy that's compliant with the Building Regulations,  
 9 and you rely on Approved Document B, it's important to  
 10 explain where there's deviations and how you've dealt  
 11 with that in a transparent way, so all the different  
 12 readers, as I've said, can factor that into their own  
 13 work and their own decisions.  
 14 Q. Yes.  
 15 Now, I want to move to a different topic,  
 16 peer review process, just before we look at issue 3,  
 17 which I would like to do with you today.  
 18 A. Okay.  
 19 Q. Just a few questions about the peer review process  
 20 that's applied at Exova.  
 21 As we've seen, Exova's reports would be written by  
 22 one member of the team and then reviewed by another  
 23 member of the team.  
 24 Can you just help us, was peer review common in the  
 25 context of fire engineering at this time?

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1 A. Okay, I typically associate the phrase "peer review"  
 2 with an external party coming in to a company and  
 3 reviewing our work. I think in this context -- well,  
 4 I call it -- it's like the checking and approvals  
 5 process, the in-house quality assurance process. So in  
 6 that context, by that definition of peer review, it is  
 7 common in fire safety engineering companies.  
 8 Q. Yes. You tell us in your report that at Arup such  
 9 review is carried out by a project director who you  
 10 define as a chartered professional; is that right?  
 11 A. Yes.  
 12 Q. You say that the purpose of such a peer review is to  
 13 ensure that each deliverable is technically correct,  
 14 accurate and fit for purpose for which the deliverable  
 15 was to be put.  
 16 A. Yes.  
 17 Q. Now, within Exova, there's no definition of "peer  
 18 review" within Exova's main project phase procedure or  
 19 their overall review procedure, and we see that  
 20 frequently reports are reviewed by somebody junior to  
 21 the author of the report.  
 22 A. Yes.  
 23 Q. Now, in your view, is that ever acceptable, to have  
 24 a review done by a junior person?  
 25 A. No, because they're more inexperienced.

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1 Q. You have also noted in your report that there is  
2 a divergence in evidence of the Exova witnesses on what  
3 the nature of peer review within Exova meant.  
4 A. Yes.  
5 Q. So we have James Lee saying it was to check that it was  
6 accurate and reasonable; we have Mr McEleney saying it's  
7 proofreading and checking for clear mistakes; we have  
8 Clare Barker saying that you review the report alongside  
9 the drawings, the relevant guidance and ADB in order to  
10 ensure the report was correct; Ms Cooney described it as  
11 part of the document control exercise; and then we get  
12 a much more detailed explanation of exactly what ought  
13 to be done in Tony Pearson's witness statement.  
14 You have commented on some of this at pages 97 to 98  
15 {BLARP20000017/97} of your report.  
16 A. Yes.  
17 Q. Would you agree that, in order to be meaningful, peer  
18 review must entail a genuine evaluation of the  
19 deliverable document, viewed in light of a scrutiny of  
20 the underlying drawings and the documentation, coupled  
21 with checking the engineering assumptions and  
22 calculations?  
23 A. Yes, I would, for the final detailed fire strategy, yes.  
24 Q. Is it right that you don't consider the peer review  
25 exercise, either for the existing fire safety strategy

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1 or the refurbishment fire safety strategy, to have been  
2 satisfactory?  
3 A. Yes, because I'd expect any other competent person at  
4 Exova to have noticed, if we want to go back to B4  
5 again, that the two parts had not been considered and to  
6 raise a query as to why not.  
7 Q. Yes.  
8 Now I want to turn to issue 3 of the outline fire  
9 safety strategy, and if we pull that up, this is at  
10 {EXO00001107}. So this is dated 7 November 2013, so in  
11 contrast to the previous version, which was  
12 24 October 2013.  
13 We can see on page 2 {EXO00001107/2} it's Mr Ashton  
14 that's written it, and then, like with issue 1, it's  
15 Mr McEleney who has reviewed it.  
16 Page 4 {EXO00001107/4}, we don't have any  
17 description of overcladding in the introduction.  
18 Then the B4 section on page 9 {EXO00001107/9}  
19 remains unchanged.  
20 A. Yes.  
21 Q. It's got exactly the same statement there that we saw  
22 before.  
23 Just to be clear, what do you think should have been  
24 said under B4 by this time?  
25 A. Well, they were now in stage E, and this was to be the

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1 final detailed fire safety strategy recording the  
2 detailed proposals for the development. So whatever  
3 analysis had been in Mr Ashton's mind now needed to have  
4 been presented in this version.  
5 Q. So you would by now expect to see not just the  
6 performance requirements, but some analysis?  
7 A. The analysis. They offered analysis, and this is the  
8 detailed fire safety strategy, and that's where the  
9 analysis goes.  
10 Q. Now, can I take you to some email exchanges that  
11 Mr Ashton exchanges with Studio E just before this  
12 issue.  
13 A. Yes.  
14 Q. It's an email exchange that occurs on 1 and  
15 4 November 2013, so just a few days before this. If we  
16 go to {EXO00000586}. I want to pick this up at the  
17 bottom of the first page. There, Mr Rek says on  
18 1 November:  
19 "Evening Terry,  
20 "Can you please confirm that the rainscreen cavity  
21 fire barriers are to be 60min FR to match the  
22 compartmentation?  
23 "Thank you.  
24 "Regards  
25 "Tomas."

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1 Mr Ashton then responds, if we go up the page, at  
2 9.05 on 4 November, and he says this:  
3 "Cavity barriers need only have a 30 minute standard  
4 of fire resistance.  
5 "Kind regards  
6 "Terry."  
7 Pausing there, do you think that the email from  
8 Mr Rek ought to have alerted Mr Ashton to the fact that  
9 Studio E did in fact need guidance on the Building  
10 Regulations and Approved Document B requirements for the  
11 external wall?  
12 A. Well, that's why they contacted Exova.  
13 Q. Now, what do you think Mr Ashton ought to have done as  
14 a reasonably competent fire engineer in response to this  
15 request?  
16 A. Can we just put the original request up, if you don't  
17 mind, please?  
18 Q. Yes, it's the bottom of page 1.  
19 A. Yes. So, as far as I'm concerned -- "Can you please  
20 confirm that the rainscreen cavity barriers are to be  
21 60min", so the first question is: what cavity  
22 fire barriers are you referring to? And I would want to  
23 understand exactly what Tomas Rek meant. Okay? Because  
24 there's the location of the cavity barriers and then  
25 their fire performance.

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1 Q. Do you think that this exchange should have affected  
2 what Mr Ashton then included in issue 3 of his outline  
3 fire safety strategy on 7 November 2013?  
4 A. Well, yes, because his strategy doesn't refer to any  
5 guidance on cavity barriers, and the design team clearly  
6 needed some guidance, that's why they contacted their  
7 fire safety engineer.  
8 Q. Just to be clear, do you think Mr Ashton should have  
9 asked for more information before giving this advice?  
10 A. I mean, he said 30 minutes. I mean, that's the minimum  
11 you could say. I think it would have been safer for him  
12 to ask the location of the cavity barriers Tomas Rek was  
13 referring to, and then to notice that the design team  
14 were unsure, and a quick check of his own report would  
15 have shown him it didn't contain any information about  
16 cavity barriers.  
17 Q. Do you think this ought to have prompted him to have  
18 referenced the locations that cavity barriers ought to  
19 have been fitted to comply with section 9 of ADB in the  
20 next version of his report?  
21 A. Yes, I do.  
22 Q. Do you think that the fact that he didn't do all of that  
23 fell below the standard of a reasonably competent fire  
24 engineer?  
25 A. Yes, I do.

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1 Q. On cavity barriers around windows, in your experience,  
2 was it common at the time for construction professionals  
3 in general not to appreciate that cavity barriers around  
4 windows were required?  
5 A. It was a common defect, yes.  
6 Q. But was there any reasonable doubt among fire engineers  
7 about whether cavity barriers were in fact required  
8 around openings?  
9 A. Was there any reasonable doubt?  
10 Q. Debate.  
11 A. Oh, debate?  
12 Q. Yes.  
13 A. Not that I'm aware of, no.  
14 Q. So you can't imagine any reasonably competent fire  
15 engineer advising that you could avoid having cavity  
16 barriers around the windows?  
17 A. If for some reason the design was struggling to  
18 incorporate a cavity barrier around a window, then  
19 a reasonably competent fire safety engineer would have  
20 to come up with a mitigation, otherwise insist that the  
21 cavity barriers were installed.  
22 Q. Yes.  
23 Now, as to what information was available about the  
24 external wall build-up as at November 2013, can we look  
25 at something said in Exova's opening submissions again.

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1 If we go to {EXO00001774/14} and we look at  
2 paragraph 4.12, here Exova are making submissions about  
3 that final issue 3 of the fire strategy.  
4 A. Yes.  
5 Q. If we pick it up in the fourth line, having set out what  
6 the report said, they say:  
7 "At the time the intention appears to have been to  
8 use a system comprised of zinc panels with aluminium  
9 honeycomb insulation: but no detailed specification or  
10 design had been set. Even if the material supplied to  
11 Exova for the preparation of its report had explicitly  
12 indicated as much, Exova's report could properly have  
13 made the same comment."  
14 I want to get your response to that.  
15 So they're making the point that, at the time,  
16 certainly the primary system that was being considered  
17 was the zinc panels with the honeycomb core, the Proteus  
18 zinc honeycomb, and they're making the point that, in  
19 those circumstances, even if more material had been  
20 supplied to them, Exova's report could properly have  
21 said the same thing. Do you agree with that?  
22 A. No, I don't.  
23 Q. Can you help us as to why?  
24 A. Yes, just to remember again, this is Exova's stage E  
25 report, their detailed fire safety strategy.

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1 I understand that one of four proposals was the zinc  
2 with the aluminium honeycomb, and understand the context  
3 that they weren't asked for their opinion about any of  
4 those particular products.  
5 Q. Yes.  
6 A. But the insulation performance, taken together with the  
7 external surface, is relevant at stage E when you're  
8 preparing your detailed fire safety strategy, making  
9 clear the minimum requirements.  
10 Q. Right. So that's back to the fact that you say it  
11 should have been flagged up that any insulation should  
12 have been compliant with 12.7 --  
13 A. Yes.  
14 Q. -- of ADB?  
15 A. Yes, and I think -- I don't know what date this text was  
16 referring to, but there were four products in the  
17 specification --  
18 Q. You mean in the NBS specification?  
19 A. In the NBS specification, two of which were zinc, and  
20 the other zinc product was a polymeric zinc panel.  
21 Q. So you don't agree that it would have been acceptable  
22 for Exova simply to say that such panels would have no  
23 adverse effect but would be considered in a detailed  
24 report later?  
25 A. No, I don't, because it's the panel and the insulation

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1 and the cavity barriers taken together.  
 2 Q. Yes.  
 3 A. And I'm still struggling on the analysis for that part  
 4 of B4 that is intended now as having meant and intended  
 5 then --  
 6 Q. So you would expect some analysis by reference to the  
 7 materials that are being proposed of how the B4  
 8 requirement is going to be met?  
 9 A. So in B4 in their report, I would expect their analysis  
 10 for space separation, because that was the common  
 11 analysis at the time, and if they did no checking of the  
 12 materials, which was common practice --  
 13 Q. Yes.  
 14 A. -- they needed to set out the required performance in  
 15 their fire safety strategy, because all the different  
 16 parts of the -- the five parts are interconnected and  
 17 interrelated, and Exova needed to understand the  
 18 intention of B4.  
 19 Q. Yes.  
 20 Now, I just want to look at what you say at page 101  
 21 {BLARP20000017/101} of your report, now,  
 22 paragraph 4.7.104. You say there, having considered the  
 23 later iterations of the fire safety strategy:  
 24 "However, as I set out in Section 4.7.107, Exova  
 25 simply re-issued their Stage C report in both October

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1 and November 2013, to be included in the Tender  
 2 Documents. They did not issue a Stage E fire strategy,  
 3 nor any report that could be considered commensurate  
 4 with Stage F1 level of detailed information."  
 5 Do you see that there?  
 6 A. Yes.  
 7 Q. Now, we know that Mr Ashton had some discussions with  
 8 Mr Sounes over the course of September through to  
 9 November 2013 --  
 10 A. Yes.  
 11 Q. -- on the updating of Studio E's fire drawings; you  
 12 recall that?  
 13 A. Yes.  
 14 Q. Those were reflected in some changes to Exova's report.  
 15 A. Yes.  
 16 Q. Mr Sounes accepted in his oral evidence that the focus  
 17 of his discussions with Exova had been on the lower  
 18 floors --  
 19 A. Yes.  
 20 Q. -- and the internal works and layouts.  
 21 A. Yes.  
 22 Q. For the transcript, the reference is {Day12/153:13-19}.  
 23 So the point I want to put to you is: isn't it  
 24 actually the case that this was an updated report in  
 25 light of the discussions between Mr Ashton and Mr Sounes

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1 on those aspects of the design that Studio E had been  
 2 discussing with Exova, and it was only later that  
 3 Studio E on their own initiative decided to include that  
 4 report in the tender documents?  
 5 A. So you mean that Exova failed to deliver their stage E  
 6 detailed fire strategy entirely?  
 7 Q. I know that's your evidence, but what I'm suggesting to  
 8 you is that in fact their report was amended in issue 3  
 9 to reflect the discussions that Mr Sounes and Mr Ashton  
 10 had been having about the lower levels.  
 11 A. Yes.  
 12 Q. Was that not enough?  
 13 A. No, because it was time to write a stage E detailed fire  
 14 safety strategy. The architect or other professionals  
 15 will ring you about their specific issues that are  
 16 concerning them. The fire safety engineer's duty  
 17 remains producing that detailed report. We are  
 18 responsible for setting out the fire safety design  
 19 principles in detail at that point.  
 20 Q. Yes.  
 21 Now, in terms of your conclusions about issue 3, you  
 22 have helpfully summarised your conclusions about that  
 23 issue in section 6.9 of your report. That's pages 213  
 24 to 216. So can we just pull those up, so starting on  
 25 page 213 {BLARP20000017/213}.

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1 I'm not going to ask you about all of these  
 2 conclusions, we don't have time to do that, but I want  
 3 to note at 6.9.12, at the bottom of that page  
 4 {BLARP20000017/214}, you say this:  
 5 "Even in the absence of outline or detailed drawings  
 6 or specifications for the components forming the  
 7 external wall construction, there was a minimum piece of  
 8 advice Exova could easily have provided."  
 9 Then you say:  
 10 "That was the performance requirements to comply  
 11 with B4(1) and B4(2) ..."  
 12 So that's the point you have been making just now.  
 13 A. Yes.  
 14 Q. Then if we go on to 6.9.14, you then say:  
 15 "Another substantial omission from this final report  
 16 was its failure to identify the works that were required  
 17 to be undertaken in the lobbies on each of the existing  
 18 floors of the building to accommodate the 'improvements  
 19 to the building services' ..."  
 20 A. Yes.  
 21 Q. Yes? And then you say there at the bottom, 6.9.15:  
 22 "The works to the lobby smoke control system are  
 23 described in a single note ... indicating that Max  
 24 Fordham was solely responsible for the performance,  
 25 specification and design of the system."

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1 A. Yes.  
 2 Q. Then if we can look at page 216 {BLARP20000017/216} at  
 3 6.9.24, you also say:  
 4 "Ultimately, Exova did not provide a set of fire  
 5 strategy drawings to accompany Issue No. 3 of their  
 6 report. In fact, specific reference to the Studio E  
 7 drawing numbers for the 'fire access and fire strategy'  
 8 drawings were removed, and no other specific design  
 9 documentation [was] referenced."  
 10 Pausing there, you're critical of the fact that  
 11 there was no set of fire strategy drawings accompanying  
 12 that third issue of the report; is that correct?  
 13 A. Yes, because you need the detailed information on the  
 14 drawings with the detailed narrative in the report to  
 15 understand the basis for the fire safety design. We  
 16 tend to not produce our own drawings, we tend to mark up  
 17 others' drawings. Other fire safety companies do a set  
 18 of fire safety drawings.  
 19 Q. Yes.  
 20 Then in the next section of your report, 6.10, you  
 21 compare the scope of the report with what Exova had  
 22 promised in their fee proposal, and you compare it with  
 23 Approved Document B.  
 24 Then if we go to page 224 {BLARP20000017/224}, at  
 25 section 6.12 you set out your conclusions on the

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1 adequacy of the primary refurbishment fire strategy, and  
 2 you say in 6.12.2:  
 3 "Based on the evidence I have presented ... it is my  
 4 opinion that Exova's Outline Fire Safety Strategy report  
 5 was wholly inadequate with respect to providing relevant  
 6 fire safety design guidance to the Design Team, the  
 7 Client and the Contractor."  
 8 You go through a number of failings, including not  
 9 dealing properly with B3 and B4, in that next section.  
 10 You're also critical, at the bottom of 226  
 11 {BLARP20000017/226}, if we can go to that, 6.12.30, of  
 12 the fact that there is no reference back to the existing  
 13 fire safety strategy; is that right?  
 14 A. Yes.  
 15 Q. The two weren't linked together.  
 16 A. Yes.  
 17 Q. There was no reference to that work; is that right?  
 18 A. Yes, that's correct.  
 19 Q. Yes, so those are your conclusion.  
 20 Now, I've done that at some speed because you have  
 21 set out your conclusions in detail there.  
 22 Can I ask you whether anything you heard in the oral  
 23 evidence of any of the Exova witnesses, or indeed any  
 24 other witnesses, has caused you to change your views in  
 25 any way about those conclusions?

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1 A. Sadly not, no.  
 2 MS GRANGE: No.  
 3 Mr Chairman, I think that is a good moment.  
 4 SIR MARTIN MOORE-BICK: Well, it is definitely.  
 5 MS GRANGE: The moment I'm supposed to stop as well. So  
 6 I will be carrying on dealing with this topic tomorrow  
 7 morning, and then we will get to the other two reports  
 8 tomorrow afternoon.  
 9 SIR MARTIN MOORE-BICK: All right.  
 10 Well, it is the time of day when we normally finish  
 11 for the afternoon, so that's what we're going to do.  
 12 THE WITNESS: Okay, good.  
 13 SIR MARTIN MOORE-BICK: I'm afraid we're going to have to  
 14 ask you to come back for some more evidence tomorrow,  
 15 but I think you were expecting that, weren't you?  
 16 THE WITNESS: I was expecting that, yes.  
 17 SIR MARTIN MOORE-BICK: Yes.  
 18 So we will resume at 10 o'clock tomorrow, and the  
 19 usual injunction: please don't talk to anyone about your  
 20 evidence or anything to do with it overnight.  
 21 THE WITNESS: Okay, no problem.  
 22 SIR MARTIN MOORE-BICK: Thank you very much indeed.  
 23 THE WITNESS: Yes, thank you.  
 24 (Pause)  
 25 SIR MARTIN MOORE-BICK: Right, Ms Grange. Thank you very

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1 much.  
 2 10 o'clock tomorrow, then, please. Thank you.  
 3 (4.30 pm)  
 4 (The hearing adjourned until 10 am  
 5 on Thursday, 29 October 2020)  
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