IN THE GRENFELL TOWER INQUIRY

WITNESS STATEMENT OF TERENCE MARTIN ASHTON

I, TERENCE MARTIN ASHTON, will say as follows —

1. Introduction

1.1 I am an Associate in the Fire Engineering department at Exova (UK) Limited ("Exova").

1.2 I make this statement in response to the request from the Grenfell Tower Inquiry dated 5 June 2018 to provide factual evidence for the purpose of Phase 2 of the Inquiry.

1.1 The facts to which i refer are within my own knowledge and are true, except where they are matters of information and belief, in which case I identify the source, and they are true to the best of my knowledge, information, and belief.

1.3 Exhibited to this Witness Statement is a short bundle of documents, labelled **TA1** to **TA24**, containing copies of certain documents to which I refer below. In doing so I indicate the relevant exhibit number and also the unique document reference used by the Inquiry.

1.4 The Inquiry's 5 June letter sets out a list of questions. Many of these go beyond what I know or was involved with. Where I can answer the Inquiry's questions I have sought to do so to the best of my ability.

1.5 I should mention that my involvement in this project was some years ago and my memory of the events that occurred is not perfect. I have looked through documents from the time, including emails i sent or received, to try to help me give as full an account as possible of the events I was involved in. Where possible, I identify emails or documents which confirm what I say.

1.6 Exova was retained to provide particular services in relation to Grenfell Tower, and I was personally involved in some, but not all, of that work.

2. My background and career

2.1 Until March 2016, when I retired, I worked full time in my role as an Associate in the Fire Engineering department. I then retired from that position. Shortly after my retirement, I returned to work at Exova on a part time basis in the same role, and I currently work one day a week.

2.2 I began my career in 1963 as a trainee Building Surveyor at London County Council. I then worked as a Technical Assistant for the Greater London Council, until its demise in 1985. I went on to become an Assistant District Surveyor at the Corporation of London with a focus on fire safety, where I stayed until 1989. I was then offered a role as a Principal Consultant at what was then Warringtonfire and is now Exova, and I later rose to the position of Associate.

2.3 My work at Exova has mainly focussed on ensuring compliance with Building Regulations and obtaining approval from Building Control: areas in which I already had more than 25 years' experience when I started at Warringtonfire.

3. Outline of Exova's Role in Grenfell Tower

Fire strategy

3.1 Exova's work in connection with the Grenfell Tower refurbishment project was in the field of fire strategy. A fire strategy is the approach taken, through a combination of different active and passive measures, to ensure that a particular building achieves a generally accepted level of fire safety, which in this country is done by ensuring that it complies with the fire safety requirements applicable under the Building Regulations.

3.2 These requirements are set out in Schedule 1 of Part B of the Regulations, which is divided into five sections entitled B1 to B5:

> B1 covers means of warning and escape – matters such as fire detection systems and routes by which occupants can exit the building.
>
> B2 covers internal fire spread (linings) – that is, protection against fire spreading within the building through non-structural elements, such as dry lining.
>
> B3 covers internal fire spread (structure) – in other words, protection against fire spreading through the structural walls, ceilings / floors, and so forth.
>
> B4 covers external fire spread, which can be from one building to another, or over the exterior surface of a building.

B5 covers access and facilities for the fire and rescue service – including space for fire engines, available risers (pipes to which firefighters can connect their hoses on the upper floors of a building), and lifts for use by firefighters.

3.3 Schedule 1 of Part B of the Regulations is expressed in fairly general terms and on any project it is necessary to satisfy the Building Control authority that they have been satisfied. There are two ways to do this. One is to follow the detailed approach set out in Approved Document B. The other is to design some alternative provision and satisfy the relevant building control authority that, although it take a different approach from Approved Document B, nonetheless it complies with the relevant Building Regulations requirement.

3.4 Work on a fire strategy always requires commenting on the regulatory requirements, and often involves advising on the likely attitude of Building Control authorities to particular proposals. Those are areas where I can use my expertise. At time – in particular, when designing alternatives to an approach set out in Approved Document B – it can involve highly technical analysis: for example, on the performance characteristics of a smoke ventilation system, or the likely behaviour of particular materials in a fire. Where our involvement in a project calls for that sort of work, it would be handled by other colleagues, with relevant engineering qualifications and expertise: though our work on Grenfell Tower did not call for that level of advice.

3.5 Fire strategy advice may be sought in relation to an existing building, or in relation to a proposed new, or refurbished building. For an existing building, the advice will address whether the measures currently in place comply with the relevant requirements, or what further measures would do so. For a proposed new or refurbished building, the advice will address whether the design of the new, or refurbished building will comply with those requirements, or what changes need to be made to the design to achieve compliance.

3.6 For a proposed building, this normally involves advising on the *typ*e of measures which need to be adopted – for example, doors with a particular level of fire resistance, or smoke detectors of a particular standard – rather than on using a spec*ific* product (such as a particular manufacturer or system). We ca*n* be asked to advise on whether a specific product would be satisfactory, and would give that advice on the basis of test evidence and/or product certification, but this is not normally part of fire strategy advice, and was not something we were asked to do for Grenfell.

3.7 The requirements of Schedule 1 of Part B which are relevant to a fire strategy vary depending on the nature of the work being done. In the case of Grenfell, the proposal involved the bottom four floors having some degree of "change of use" (including residential

accommodation on one level). This meant that our fire strategy advice focussed predominantly on the bottom four floors.

3.8 For Grenfell Tower, Exova provided two sets of fire strategy advice – one was a report in relation to the existing condition of the building, and the other was in relation to the proposed refurbishment. I was not involved in the advice in relation to the existing condition of the building – my colleague Cate Cooney handled this, and I understand that she will also be giving a statement. I was responsible for the advice in relation to the proposed refurbishment, and so I describe this below.

3.9 The advice in relation to the refurbishment took the form mainly of an initial "design note", and three subsequent issues of an outline fire strategy report. I describe these in detail below. Where these documents deal with specific issues relevant to the issues identified by the Inquiry, I deal with the points made in the documents and the background emails thematically, rather than in strict chronological order.

3.10 Following the last issue of the outline fire strategy report in November 2013, we had some occasional further involvement in the Project, and I also describe this below.

Approach by Studio E

3.11 So far as I am aware, the first contact Exova had in relation to the Grenfell Tower project was on 10 April 2012, when I received an email (TA/1: EXO00000468) from Markus Kiefer of Studio E, a firm of architects, attaching a number of sketches in relation to the proposed refurbishment (including a layout proposal for the remodelling of the walkway and office levels), and asking Exova to provide our "*initial assessment regarding fire escape strategies for the above layout proposals*". These sketches related to the bottom four floors of the building which I referred to above.

3.12 My understanding from discussions with Studio E around this time was that:

(A) KCTMO, the Tenant Management Organisation responsible for the building, had asked them to put together a proposal for the upgrade and refurbishment of the building in preparation for a planning submission; and

(B) Studio E had had a preliminary meeting with the London Fire Brigade, in early 2012, at which it had been decided that a fire consultant was required to assist with the refurbishment.

3.13 I received a further email from Studio E on 3 May 2012, sent by Bruce Sounes (TA/2: EXO00000474). Although I had worked with Studio E on an earlier project, I had not dealt

with Mr Sounes before. His email explained that the "principles" on which the refurbishment was "probably going to be based" in the following terms:

> "1. New flats on vacant Office level [...]
> 2. Removed stair and infill to SE corner to tower on GF, Mezzanine, Deck and Office levels. Creation of some office space at GF and Mezzanine.
> 3. Enclosure to external areas at deck level to create new accommodation, possibly housing.
> 4. Overcladding
> 5. New boilers to all flats.
> 6. Reconfigured entrance / circulation areas to tower."

3.14 Mr Sounes requested a fee proposal, and asked that we "please break this down into the [RIBA] Stages C, D, E, F and beyond (if required) and give a summary of what you will be doing at each stage".

3.15 That email and the attachments are the typical amount of information I would expect to receive for the purposes of providing a fee proposal. In fact, sometimes only planning drawings might be provided, which would be sufficient.

3.16 The RIBA Stages are a model for the building design and construction process, set out in the Royal Institute of British Architects' Plan of Work. At this time, the Plan of Work comprised Stages A to L (it has since been revised and is now made up of stages 0 to 7). Stage C was headed 'Concept'; Stage D 'Design Development'; Stage E 'Technical Information'; and Stage F 'Product Information'.

3.17 In giving fire strategy advice on a project it is usual for most of Exova's work to be at stages D and E, and for Exova's involvement to come to an end around Stages E or F. However, the way a project evolves does not always fit neatly into the RIBA stages. Exova's involvement in a project is also sometimes brought to an end earlier than anticipated at the fee proposal stage.

The Refurbishment Fee Proposal

3.18 On 9 May 2012, Margaret Treanor, a Divisional Support Services Assistant in the Fire Engineering team, sent a fee proposal to Studio E on my behalf in relation to the refurbishment project (TA/3: EXO00000385). Under the heading "Proposed Scope of Work", this stated that "*the planned fire safety work would be undertaken using the relevant design codes and will facilitate the progression of the design from RIBA Stage C to RIBA Stage F*".

3.19 Typically, at Stage C an outline fire strategy would be produced in a simple format, for discussion with the designers. Hence, under the heading "*Stage C*", the fee proposal indicated that the work would focus on issues that would either have an effect on a future application under the Building Regulations or would have a significant cost impact. It noted that "*more detailed issues would not be covered at this stage of the work*" and confirmed that "a *preliminary fire strategy report would be produced which summarised the main fire safety issues for the project*".

3.20 Around Stages D and E, the initial advice is typically developed, and changes are made to the strategy as the design changes/develops. In relation to Stages D and E, the fee proposal envisaged a detailed fire strategy for the proposed refurbishment which would be written in line with the requirements of the Regulations. The fee proposal notes that "*the fire safety design would be documented in a fire strategy report. This document would ultimately be submitted to the building contract authority in order to achieve regulatory success*".

3.21 By the time of Stage F, a contractor has generally been appointed to carry out the project. For large projects this is often on a "design and build" basis, meaning that the contractor takes on responsibility for the design of the works (including completing any unfinished design work) as well as the construction of the works. What often occurs is that the contractor who has been appointed to carry out the project will carry out a 'value engineering' exercise, meaning they look for ways to reduce the cost of the project (for instance through changing materials or approach) while still meeting the client's objectives. Such changes may or may not impact on the fire strategy. It is not a given that Exova will remain involved in the project at this stage. It is not unusual for the contractor to take responsibility for fire strategy issues themselves, or appoint their own preferred fire strategy consultant. Although the fee proposal set out an explanation of what would usually occur at Stage F, it did not include a proposed fee for that phase. Instead, it provided that Stage F would be charged at Exova's standard hourly rates or, if preferred, a lump sum fixed fee could be provided if the scope of services was further defined.

3.22 The fee proposal set out an agenda for the fire strategy using Exova's standard template, which included (1) means of escape; (2) assessment of fire safety systems requirements; (3) recommendations re smoke ventilation requirements; (4) determination of external fire spread issues and impact on architectural design; (5) recommendations of compartmentation and structural fire protection standards; and (6) assessment of access and facilities for the fire service.

3.23 I produced the fee proposal and it was reviewed by Sean McEleney, who was at that time a Graduate Engineer in the Fire Engineering Department. Mr McEleney has since left Exova's

employment. His role in signing off the fee proposal was to check that there were no clear errors.

3.24 I am aware that a separate fee proposal was provided in relation to a fire strategy report on the existing condition of the building. I was not involved in this work, and I do not personally recall how it came about, so I will not comment on it.

4. Reports prepared by Exova

The Design Note

4.1 On 12 September 2012, Jean Watt, a Divisional Support Services Assistant at Exova, on my behalf, issued a design note to Studio E in respect of the Refurbishment (TA/4: EXO00001207).

4.2 I recall that the design note was produced following an initial meeting with Studio E, who requested that we prepare something in outline form to discuss. The design note, therefore, contained an outline fire strategy for the refurbishment, with particular emphasis on means of escape and access and facilities for the fire service. It was not intended to be a firm set of proposals for gaining Building Control approval, but rather to assist the architects in developing the design.

4.3 The focus of the design note was on the internal refurbishment and reordering of the lower levels of the building, since these floors were subject to a change of use. The design note does not consider cladding – the only information I had at this time was the reference to an intention to have "overcladding" in Mr Sounes' e-mail of 3 May 2012, and I had not seen any specific proposals that could be commented on.

Issues raised in the design note

Smoke ventilation

4.4 I was aware at the time of issuing the design note that there were proposals to make the existing smoke extraction system a mechanical system. I recall that the London Fire and Emergency Planning Authority and Building Control were not happy with the building's existing system (and indeed that there was a general recognition that it was unsatisfactory), and that the intention was to upgrade it to a mechanical system.

4.1 On 30 July 2012 I had been copied on an email from Mr Sounes to Ms Barker (TA/5: EXO00000378) containing the specifications for the smoke ventilation of the residential lobbies. I cannot now recall receiving or reading this email but I believe it must have been sent to Ms Barker as she was co-ordinating the production of the fire strategy report for the existing condition of the building.

4.2 On 10 September 2012 my colleague Cate Cooney, who had authored the fire safety strategy in respect on the existing building, emailed me with her "*thoughts on the possible solution to Grenfell Tower*" (TA/6: EXO00000388), including her thoughts on the smoke ventilation. Her email commented that "*the existing ventilation system is questionable and the overall scheme theoretically makes the existing conditions worse by adding to the additional risk of [two] extra residential floors to the building. It is proposed to upgrade the ventilation system, but the standard it will achieve is unknown. There are also no details on the terminal to the shaft. Generally, there is a significant approvals risk with the current proposals, particularly at walkway level.*"

4.3 At paragraph 3.1.2 of the design note, I referred to the existing smoke extract system needing to be "*refurbished and/or modified to reflect statutory requirements*".

Sprinklers

4.4 The design note identified at walkway level that "as *stairs serving residential accommodation should not also serve other accommodation, it may be necessary to provide sprinkler (or water mist) systems to the boxing club and office suite*", and went on to say that "*some modification of the above requirements may be possible subject to negotiations with the statutory authorities*". The same comment was made with regard to the reception/office suite at ground level.

4.5 Approved Document B specifies that sprinklers are provided in new residential buildings exceeding 30m in height. This was an existing building and therefore this requirement did not apply. However, the fact that the stairs at walkway level were going to be serving both residential and non-residential accommodation might cause the Building Control Authority to require some additional measures, such as the installation of sprinklers in some locations. This was the sort of question that would normally be discussed with the client as part of the development of the fire strategy.

First edition of the Refurbishment Fire Strategy

4.6 On 31 October 2012 my colleague Margaret Treanor, on my behalf, sent to Studio E the first issue of the Outline Fire Safety Strategy Report for the refurbishment (TA/7: EXO00000518).

4.7 The report was signed as having been reviewed by Sean McEleney. It is standard practice within Exova for reports to be peer reviewed in this way. Mr McEleney's role was to review the report against the drawings which had been provided: I would expect him to check that what was set out made sense and that there were no clear errors in it.

4.8 The report followed a standard format for a fire strategy. It set out in the introduction that it was based upon discussions held with the design team and on drawings produced by Studio E. It then pointed briefly to the statutory considerations, after which the substantive sections followed the layout of Schedule 1 of the Building Regulations, dealing in turn with the requirements set out in B1–B5. It also noted that "*compliance with these requirements is normally achieved by meeting the standard contained in Approved Document* B *and/or* BS *9991*".

4.9 I highlight below a few aspects of the report which seem to me to be particularly relevant to the issues to be considered by the Inquiry.

(A) Section 1 of the report sets out what the refurbishment comprised, and the various documents which had been supplied to Exova and were used as the basis of the report. Those documents did not cover cladding, and so the description of the refurbishment in section 1 did not include it: I knew from the original email that there was a proposal to have "overcladding", but I did not have any details that I could comment on in the fire strategy report.

(B) Paragraph 3.1.1, which deals with compliance with B1 (means of warning and escape), reflects my understanding that the existing smoke extract arrangements within the common lobbies in the residential tower were to be overhauled.

(C) Paragraph 3.1.2 refers to compliance with B3 (internal fire spread (structure)). This section makes clear my understanding that all new elements of the structure would be constructed to have the same standard of fire resistance as the existing elements, which was assumed to be 120 minutes for the structural frame and 60 minutes for floors. It then explains that compartment walls and/or floors will be provided in the areas listed with the required standard of fire resistance, and that doorways within compartment walls will be fitted with self-closing doors with a 60-minute standard of

fire resistance except where a different standard was necessary to satisfy B5 (access and facilities for the fire service).

(D) Paragraph 3.1.4 which refers to B4 (external fire spread), comments that "*it is considered that the proposed changes will have no adverse effect on the building in relation to external fire spread but this will be confirmed by an analysis in a future issue of this report'*. The documents the report was based on set out various proposed changes which in my view would not have had an adverse impact on external fire spread. I was aware that they did not address the exterior of the building: for example, they did not include anything in relation to cladding, let alone a proposal that I could have analysed for the purpose of preparing this report. I knew therefore that if and when I was given detailed information, that might alter the position, hence the language mentioned above.

4.10 Following the design note, I recall having a discussion with Studio E about some of the issues that had been raised in Ms Cooney's 10 September 2012 email (TA/6: EXO00000388) including the possibility of sprinklers. This was also a point that had been covered in email exchanges with Studio E following the design note.

4.11 In an email I sent to Adrian Jess of Studio E on 29 November 2012, I commented "*Walkway +1 level – I don't see any way of improving the means of escape from the new accessible flat other than by proving a full fire detection system (an automatic fire suppression system (water mist or sprinklers) would add an extra factor of safety but we don't want to offer this at this stage)*". (TA/8: EXO00000601) This email was concerned with one flat (the "new accessible flat" referred to above) where the maximum travel distance to the door of the flat exceeded the Code recommendation. My email was discussing the possible mitigating measures which could be introduced to compensate for the excessive travel distance and which might satisfy Building Control that what was proposed was acceptable. I proposed the possibility of a full fire detection system which went beyond the system that would otherwise be provided. I noted that the client did not want to propose an automatic fire suppression system (my reference to "we" reflected my understanding of the client's preference). This was understandable because it did not make a lot of sense to introduce an automatic fire suppression system into a single flat.

4.12 In the same email chain Mr Jess states that "*I wasn't expecting to have to go as far as sprinklers / mist which wouldn't be typical in residential accommodation*". I agree that because this was an existing building, it would not be typical to introduce an automatic fire suppression system.

Second edition of the Refurbishment Fire Strategy

4.13 A further draft of the report, headed 'Issue 02', was issued on 24 October 2013, about a year after the first draft was issued (TA/9: EXO00000397). Again, Ms Treanor sent the report to Studio E on my behalf. I do not recall exactly what took place between the first and second issues of the report but I see from the emails that there were various alterations to the floor layout on the lower four floors during this period, on which I was asked to comment at various times, and that I was also asked to comment on occasion in relation to the refurbishment of the smoke ventilation, on which the consultant engineers Max Fordham were taking a lead. I believe there would also have been one or more meetings with Studio E and KCTMO to discuss the design and how to demonstrate compliance with the Building Regulations.

4.14 The structure of the second draft of the report mirrors the first. The drawings which the report refers to as containing the design proposals are different, reflecting the fact that the design had been updated since the previous draft of the report.

4.15 There was no change to the section of the report dealing with B4 (external fire spread) (paragraph 3.1.4). I had still not received any information regarding any proposals in relation to "over-cladding" and therefore did not make any change to this part of the report.

4.16 This version of the report was reviewed by Tony Pearson, a Senior Consultant with Exova. Mr Pearson's role was similar to Mr McEleney's role in reviewing the previous version, though Mr Pearson was more senior.

4.17 Mr Pearson made a change to the report relating to the fact that, under the new proposals, the staircase (and means of escape) was shared by both residential and non-residential accommodation. He drew attention to the fact that this did not comply with the requirements of the Building Regulations and offered a comment about the fire risks posed by non-residential accommodation as against residential accommodation. I did not review this amendment before the report was sent out. When I later read it, I was not very happy about it and commented on it in an email to Mr Pearson. I stated that what he had said was "debatable". I cannot remember exactly the thought process which lay behind this comment, but I think that probably what I had in mind was that there was scope for debate about the relative fire risks posed by non-residential and residential accommodation and that this might be picked up on by Building Control.

Third edition of the Refurbishment Fire Strategy

4.18 On 5 November 2013, Mr Sounes of Studio E sent me some comments on the fire strategy and some additional drawings. Following some correspondence with him and his colleague Tomas Rek (TA/10: EXO00001406 and TA/11: EXO00001408), we issued the third draft version of the report on 7 November 2013 (TA/12: EXO00001328 and TA/13: EXO00001107). As things turned out, this was the final version of the report which we issued.

4.19 This issue contained more detail on the proposed smoke ventilation system, which I discuss below, and on the fire resistance elements of the structure in section 3.1.3, which details compliance with B3 (internal fire spread (structure)). The introduction again confirms that the report was based upon discussions with the design team and RBKC and on fire access and fire strategy drawings produced by Studio E.

4.20 Again, I had still seen no proposals in relation to any cladding, and so the report contains the same statement as before.

5. The position after Exova's reports

Discussion about the smoke ventilation system following third issue of report

5.1 On the Grenfell Tower project, Exova had relatively limited involvement once the third issue of the report had been produced. Although the duration of Exova's involvement varies from project to project, what occurred on the Grenfell Tower project is fairly typical.

5.2 Following the third issue of the draft report I was involved in some discussions about the proposed new smoke ventilation system which was being designed by Max Fordham and which was being looked at very closely by RBKC's Building Control department.

5.3 On 11 November 2013, John Allen of RBKC emailed Mr Sounes, copying me, stating that RBKC did not think that the information submitted so far was adequate to enable an effective consultation with the fire authority (TA/14: EXO00000721). The email stated that "*the question that needs to be proposed to the Brigade is whether the replacement smoke extract system to the residential parts will be acceptable*". I do not know what was sent to RBKC prior to this email. The points in the email relate to Max Fordham's work in designing the smoke extract ventilation system, not to Exova's work.

5.4 On 14 January 2014, Duncan Campbell of Max Fordham emailed Philip Booth of Artelia (the Employer's Agent, CDM Co-ordinator, and Quantity Surveyor for the refurbishment) noting that they had been trying to produce a ventilation strategy for smoke-venting of the lift

lobbies at each of the residential levels which would be acceptable to RBKC Building Control and which they could feel confident about presenting to the Fire Brigade (TA/15: EXO00000653).

5.5 I was copied into that email and responded to Mr Campbell stating that it would be possible to carry out a CFD analysis comparing a code compliant scheme with what was being proposed. CFD stands for "computational fluid dynamics" – this is a highly technical analysis in which assumptions are made about the occurrence of a fire within a building and the movement of the resulting smoke is then modelled using special software. It is an expensive and complicated exercise. It is not something that I personally could carry out, but within Exova there are inviduals who could do so. As I mentioned in my email, it had not been budgeted for.

5.6 Mr Booth replied to Mr Campbell stating that Building Control's position on what they would accept was either (i) a computer model showing flow rates (in effect, a CFD analysis); or (ii) survey information showing existing flow rates.

5.7 On 3 March 2014, Mr Sounes emailed me stating that he thought that the resolution of the issues over the smoke ventilation system would be controlled by the contractor (whose appointment was imminent, as I understood it) (TA/16: EXO00000627).

5.8 On 17 March 2014 Claire Williams of KCTMO and Matt Smith of Max Fordham exchanged emails about the possibility of a CFD analysis (TA/17: EXO00000617).

(A) Mr Smith reminded Ms Williams that if a CFD analysis was required we (Exova) would need to carry that out. Mr Smith copied me into the email chain at that point.

(B) Ms Williams later replied noting that on site she had spoken with Mr Smith about finding the original installation information to evidence the intended design strategy and any measurements. She asked whether Mr Smith had done so.

(C) Mr Smith replied that Max Fordham would look into this as they held historical regulatory documents in their library. He also noted that there would be the issue of which regulation applied at the time and that he thought it was most probably a Greater London Council ("GLC") document rather than Building Regulations for smoke clearance in a building of this time.

(D) I replied to this email stating that:

> "*The building undoubtedly had to comply with the GLC (or LCC) Section 20 Code and it* was *likely that it had to comply with the LCC Means of* Escape

Code if it was consented before 1971 … However, the system installed does not comply with the LCC or GLC Section 20 Codes or the LCC Means of Escape Code. In the beginning of the 1970s there were a few buildings built with what can only be described as "expehmental systems["] and this appears to be one of these."

My reference to "experimental systems" was to an unusual system. I was in the industry in the 1970s and recall one or two buildings at that time which were built with such systems.

Exova's involvement after the appointment of Rydon

5.9 I was not aware at the time precisely when Rydon took over the site, or were formally appointed. I was aware in general terms that Rydon had taken on overall responsibility for the project. We were not approached by Rydon to provide services to them. This is not an unusual state of affairs.

5.10 As a result of this, we were not copied on project correspondence, or invited to attend design team meetings, or to agree commercial terms for our continued involvement. On occasion, some queries were raised with me from time to time, and I discuss these below, but aside from that we were no longer involved in the project.

5.11 I have seen minutes of a meeting dated 1 April 2014 (TA/18: RBK00018805) which state:

"Exova completed the fire strategy at tender stage. They have not been novated but [Simon Lawrence of Rydon] will contact them with a view of using them going forward".

5.12 I did not attend that meeting and until shown a copy of those minutes recently I had no knowledge of that discussion. I do not recall any direct contact from Mr Lawrence or from any other individual from Rydon relating to the fire strategy, although Mr Lawrence and I were copied to some later emails regarding discrete queries. I understand that a search of Exova's emails and documents has not located any such correspondence from Rydon. Had I seen those minutes or been aware that Rydon might wish to provide us instructions I expect that I would have contacted Rydon to see in what capacity we could assist.

Ad hoc communications

5.13 I did receive some *ad hoc* queries about Grenfell Tower after the production of the last version of our report and after Rydon had been appointed. Even where Exova has no ongoing involvement, it is not unusual to receive queries of this sort. Other consultants, or

even contractors, sometimes pick up the phone or send an email to check a point relating to fire strategy.

Harley's request for information

5.14 On 17 September 2014, about 10 months after the last version of Exova's report was issued, Harley Curtain Wall ("Harley") produced a Request for Information ("RFI") relating to the "*the requirement of firebreaks*" within the cladding system (TA/19:). The email attaching the RFI was forwarded to me by Neil Crawford of Studio E on 18 September 2014. The email requested that I comment on the RFI and asked whether I believed the interpretation in the RFI in relation to the "*stack effect*" was correct.

5.15 I recall receiving the email; I do not recall the content of the RFI though I have now reviewed it. The point being raised by Harley related to the installation of horizontal fire breaks in the cavity created between the cladding façade and the original wall of the building. Harley was suggesting that the while such fire breaks might be required at every floor level for the cladding to the vertical columns which ran all the way up the building, they might not be required in the areas of cladding above and below the windows. The point being made implicitly was that the windows interrupted the cladding, so in those locations there was not a continuous cavity running up the building and a horizontal fire break might not be required.

5.16 Mr Crawford asked me whether I considered that Harley's interpretation of "*stack effect*" was correct. In context I understood the "*stack effect*" that Mr Crawford asked about to relate to the way in which the gap between the main structure of the building and cladding might act like a chimney in the event of fire, drawing flames and gases up within it. (The term "stack effect" is common within the industry, and can be used more broadly, and not just in relation to fire).

5.17 I responded to Mr Crawford that I had never seen details of what they were doing to the external walls and asking for "*cross sections/elevations*". In response, Mr Crawford sent me the initial drawings he had received from Harley (TA/20:). These were large scale drawings which showed zinc outer cladding but did not specify the materials to be used for insulation.

5.18 In response to Mr Crawford's question I then sent an email stating (TA/21: EXO00000708):

> "*If the insulation in the cavities behind the rainscreen cladding is combustible you will need to provide cavity barriers as shown on your drawing (number 1279 (06) 120) in order to prevent fire from spreading from one flat to the one above even if there isn't a continuous cavity from the top to the bottom of the building.*"

5.19 The drawing I referred to showed a cavity barrier sealing the gap between the original concrete structure of the building and the rainscreen barrier.

5.20 Mr Crawford forwarded my email to Harley, and then sent me Harley's response. Harley stated that the insulation was "class 0", and therefore they believed no "fire barrier" was necessary. From reviewing the email, I see that it attached a datasheet for the Ceiotex RS5000 product but I do not remember seeing that data sheet at the time. I understand that this was a product intended to be used for insulation behind the cladding. Ceiotex RS5000 was said to have a class 0 fire performance. A class 0 material is defined as one which is either composed throughout of materials of limited combustibility or is a class 1 material (a material achieving a class 1 surface spread of fire when tested to BS 476-7) which additionally has a fire propagation index (1) of not more than 12 and sub-index (i1) of not more than 6 (when tested to BS 476-6). I responded on 18 September 2014 in the following terms:

> *"A material which has a Class 0 rating is not necessahly non-combustible although the reverse is invariably true. Some Class 0 products will burn when exposed to a fully developed fire. In any case, you need to prevent fire spread from [one] flat to the flat above as I stated in my earlier email. What isn't clear from the information to hand is whether or not there is a continuous cavity from top to bottom in any part of the cladding (apart from around the column casings) irrespective of the type of insulation?"*

5.21 Mr Crawford responded the same day thanking me for my email, and as far as I am aware, there were no further communications in this sequence involving me.

"Fire breaks"

5.22 Since the Grenfell Tower fire, I have seen a further email from Mr Crawford to me dated 3 March 2015 with a "quick question". He forwarded an email from Harley and attached a number of drawings (TA/22: EXO00001315). The email stated that "as *part of the re-clad we are we have added fire breaks around the apartments as per the email below. Can you comment on the level of protection (90+30) as to whether this is suitable. My only query might be that we have different levels of party wall at the lower levels see attached fire plan with some 60 some 120 walls.*"

5.23 Reading this email now, I understand Mr Crawford's reference to "fire breaks" to mean cavity barriers.

5.24 A "90+30" level of protection means that a product should maintain its physical integrity in the event of a fire for at least 90 minutes, and provide insulation to limit heat transfer for 30 minutes.

5.25 I do not have any recollection of seeing this email or the attached "*Specification Note*", or of sending any reply to it. I understand that in reviewing Exova's documents no response to this email has been found. It is very possible that I did not reply to it and if that is the case then I probably did not see this email.

5.26 The question I was asked was about the suitability of fire breaks which provided 90 minutes of integrity and 30 minutes of insulation. Had I seen the email, I would have been able to answer this question very quickly: the answer would have been that cavity barriers need only have a 30 minute standard of fire resistance as they are necessary to restrict the spread of smoke and flames through cavities and they should not be confused with fire stopping which has to have the same standard of fire resistance as the adjacent structural element.

5.27 I would not have needed to look at the details of the attachments to provide this answer. Having now reviewed the email and the attachments I note that, at the back of the pack, there is reference to "*Glazing-P1-Panels*" in the Specification Note (TA/22: EXO00001315), which provides some information on the panels and describes the cladding as aluminium composite panels. In relation to that email and its attachments, I note:

(A) The drawings dated 20 August 2014 show a fire break from the exterior surface to the cladding but do not contain information concerning the cladding itself.

(B) The Specification Note mentions that the cladding would be a "*Reynobond Rainscreen Cassette*". Reynobond is a brand name and there are various types of Reynobond product, some which include insulation of limited combustibility and others which do not. The information provided in the Specification Note does not indicate which type of Reynobond system it was intended to use.

(C) The Specification Note refers to "Glazing-P1-Panels" as having a 25mm Styrofoam core. Had I seen this, I would have drawn Studio E's attention to the fact that this would not be acceptable to Building Control because Styrofoam is a combustible material.

Fire stops vs cavity barriers

5.28 In this section I deal with an email chain concerning a question of whether a cladding system needed fire stops rather than cavity barriers. By way of background:

(A) In a cladding system, a cavity barrier is a product installed between the external wall of the building and the cladding, which is intended to limit the spread of fire upwards through the gap (cavity) between the wall and the cladding.

(B) Fire stopping is a material in the structure of the building itself (e.g. concrete / metal) which, again, is intended to stop the spread of fire. For example, where a hole is drilled in a concrete floor slab to allow pipework to pass through, the gaps around the pipework will normally be "fire stopped" with a suitable material, so as to maintain the integrity of the floor slab with regard to fire. It is often necessary to provide fire stopping having the same standard of fire resistance as the floors of a building at the junction of the external walls and the structural floors.

5.29 On 31 March 2015, Mr Crawford forwarded me an email chain, some of which I had been previously copied into, entitled "*Grenfell Tower Fire Stopping*" (TA/23: EXO00000715). I set out below an overview of the email chain.

(A) The chain started on 26 March 2015 with an email from Peter Kay of Siderise to Ben Bailey of Harley. He cited Approved Document B and told Harley that Siderise's cavity barrier product would "*offer 90 minutes fire integrity and 30 minutes fire insulation, therefore exceeds minimum requirements*". It is clear that Siderise's understanding was that what was required in the gap between the façade and the original building was a cavity barrier, as I have explained it above. I was not copied at this stage.

(B) Mr Crawford then asked RBKC's Senior Building Control Surveyor, John Hoban, if this was acceptable, and suggested discussing the matter with Harley's Ben Bailey.

(C) Mr Hoban, in response, referred to different provisions of Approved Document B, and indicated by two separate emails that (i) the relevant "*fire time*" was 120 minutes, and (ii) one of the requirements was a 120 minute fire stop, rather than merely a cavity barrier. It is clear that Mr Hoban took a different view from Siderise, and considered that fire stops, rather than cavity barriers, were required in the gap between the façade and the original wall of the building. I was copied on the second email from Mr Hoban, which included the earlier exchanges in the chain.

(D) Mr Crawford then replied to Mr Hoban, without copying me, stating that "*the subject of fire barriers is raising a lot of concern on site not least because of program and cost*", and queried whether Mr Hoban had been right to say that a fire stop rather than a cavity barrier was called for.

(E) Mr Crawford forwarded that email to me and asked me if I could "*comment on the history*", noting that he "*can't see anything that seems to reference it in the fire strategy*".

(F) I replied that "*[t]his isn't something that would necessarily form part of a fire safety strategy*". Looking at this comment now, it reads a little oddly. I think that my comment was probably a narrow one, i.e. that a detailed commentary on whether Approved Document *B* required cavity barriers or fire stops in this location was not something which would normally be included in a fire safety strategy. In a broader sense, commenting on the need for cavity barriers within a cladding system (or elsewhere) certainly might form part of a fire safety strategy. I agreed, however, that "*a cavity barrier is all that is required in this application*". My email continued "*[e]ven if we were to agree with RBKC, it is difficult to see how a fire stop would stay in place in the event of a fire where external flaming occurred as this would cause the zinc cladding to fail.*"

5.30 My email was trying to explain that if a fire were to occur with external flaming, it would take some of the cladding panel with it, and this might cause the fire stop to fall away with it (this would of course depend on precisely how the fire stop was fixed).

5.31 Some minutes after I sent that email, I received an email from Mr Pearson that commented on the same issues and said that "*fire could enter the cavity if there is flaming through the windows*", but that "*if significant flames are ejected from the windows, this would lead to failure of the cladding system, with the external surface falling away and exposing the cavity, eliminating the potential for unseen fire spread. A standard cavity barrier should be sufficient to prevent fire spread between floors while there remains a cavity. In view of the above, we do not feel that there should be a need for a 2-hour rated fire break in the cavities along the lines of the compartment floors or walls*" (emphasis added) (TA/24: EXO00001347).

5.32 I do not recall the email from Mr Pearson but I agree with what he said in his email. In fact, I believe he explains the point better than I did. A two-hour cavity barrier would be pointless in this situation if there is an external fire.

STATEMENT OF TRUTH

I believe that the facts stated in these witness statement are true.

Signed 

Full name Terence Martin Ashton

Dated 27 September 2018