Grenfell Tower Inquiry

Phase 2 Module 2

Written Opening on Behalf of AAP SAS

A. Introduction

1. At the outset of these written submissions, we wish to reiterate our profound sense of regret in relation to the Grenfell Tower fire and its terrible consequences. We express our sympathies to all those affected, and we recognise the importance of this Inquiry in providing a comprehensive account of the causes and consequences of the fire, and a fair and objective evaluation of the responsibilities of those concerned. We continue to hope that the reader of these written submissions will understand that if the Inquiry is to fulfil its remit, it must receive representations from all participants, such as the Company we represent, and must give those representations careful consideration if it is to arrive at a true and just conclusion.

2. The case for the Company has already been outlined in our Phase 1 openings and closings (written and oral) and in our Phase 2 openings (written and oral). We refer back to those submissions without repeating them. In these present submissions, we propose to review the state of the evidence to date and also to set the scene for the evidence which we anticipate that the Inquiry will consider in Phase 2 Module 2.

3. We wish to begin by reminding the Inquiry of a series of events which, though crucial in terms of the eventual and terrible outcome, were nonetheless events in which on any view the Company had no involvement.

4. The first of these events was the start of the fire in Flat 16. The Inquiry has dealt with this in its Phase 1 report, at Part II Chapter 10 paragraphs 10.1 to 10.17, and Part III Chapter 21 paragraphs 21.2 to 21.5. No responsibility can attach to the Company for the start of the fire.

5. The second matter concerns the extent, if any, of the fire safety precautions available within Flat 16 and indeed the remainder of the Tower. The Inquiry has heard and will

continue to hear evidence concerning the deficiencies in such precautions. Among other obvious points are the absence of a sprinkler system or other means of extinguishing fire within the individual flats, including Flat 16.

6. The next point to which we refer is the escape of the fire into the cladding system. There can be no doubt that if the escape of the fire had been prevented or even delayed sufficiently to enable fire fighters to extinguish it within the Flat, then the Grenfell tragedy would simply not have occurred. The Inquiry investigated some of the reasons for the escape of fire into the cladding system in its Phase 1 report, including the use of combustible materials surrounding the windows, and the absence of cavity barriers which were manifestly required under the Building Regulations and under Approved Document B. It should never be forgotten that, on the evidence, a delay of an additional few minutes in the escape of the fire would have enabled the fire service to extinguish it whilst still in the Flat, without any of the terrible consequences which followed, and indeed the Stay Put Policy was based on the assumption that this would occur. The Inquiry in its Phase 1 report, Executive Summary page 2, found that fire-fighters entered the kitchen of Flat 16 only 5 minutes after the fire broke out. Again, it is obvious that the Company bears no responsibility in relation to these crucial matters.

7. Finally in this initial review, we make reference to the expert evidence which the Inquiry has received, which we understand will be reinforced by further scientific evidence, to the effect that it was the combustible insulation which could well have been the first major component of the cladding system to ignite, and which therefore played a key role in precipitating the ignition of the ACM panels. The importance of the presence of the combustible insulation emerges clearly from a comparison with the outcome of the fire at Taplow House on the Chalcots Estate on 17 January 2012, where ACM panels were utilised in conjunction with non-combustible insulation. This fact, together with a more appropriate use of cavity barriers, played a large part in avoiding the kind of tragedy which occurred at Grenfell.

8. Of course, we acknowledge that ultimately the ACM panels were ignited and made their contribution to the progress and outcome of the fire, but once again we wish to make a series of general points in relation to the decision to use ACM PE panels in the refurbishment of Grenfell Tower.

9. The first and quite general point to make is that just as ACM PE panels were widely used both in this country and abroad, so was their physical nature widely known and understood. We annex to these submissions a paper summarising some of the evidence currently available as to industry knowledge of the characteristics of ACM PE prior to the Grenfell Tower fire. It is a remarkable feature of the evidence within Phase 2 that hardly any of the witnesses called to date were prepared to acknowledge an awareness of the combustible nature of the core of the panel, though some admitted to an awareness that the core was plastic and some (but fewer) admitted that the core was therefore combustible. The Inquiry may take the view that those who profess ignorance of these matters do so with their own interest to protect. We know from the evidence of Professor Bisby that the challenging nature of the core would have been widely known among those concerned with fire safety. Professor Bisby in his Phase 1 report at paragraph 431 acknowledges that PE materials are known to be highly combustible, something which in his oral evidence on 21 November 2018 he confirmed, pg. 20ff. Consequently, a responsible specifier would have taken into account the combustible nature of ACM PE when selecting the combination of materials to use on the external façade. Moreover, the Inquiry may take the view that, irrespective of the precise state of knowledge of individual witnesses, there is a more fundamental point. Since no one concerned with the choice or the use of ACM PE could have been unaware of the existence of the core, it would follow that anyone responsible for the choice or the use of it had the option to check the combustibility of the core, whether by asking the manufacturer directly (which the evidence shows to have occurred on other projects) or by some other means (such as checking the information on the manufacturer's website or looking at test results, for example those available on the websites of testing and regulatory bodies), and none of those responsible for the refurbishment can escape their share of responsibility by claiming ignorance or lack of information.

10. It is also indisputable that alternative options were available, including not only non-combustible insulation, but significantly less combustible cladding panels, in particular those which were fire retardant. In respect of the latter, it is worth noting that at the material time the Company was reducing the price difference between its ACM PE and ACM FR panels. The evidence has also shown that a zinc composite material with a fire retardant core had originally been specified for use at Grenfell Tower, and that

indeed the Company had been asked for a quote to provide such a product. Those who ultimately selected ACM PE for use at Grenfell Tower cannot credibly claim to have been ignorant of the availability of more fire-retardant alternatives.

11. The Inquiry may have been struck in the course of Module 1 by the growing body of evidence to the effect that quite simply no thought was given, in the design, fabrication and installation of the cladding system, to compliance issues in relation to fire. Indeed, it seems that few if any of those involved even managed to read the BBA certificate, or, if they did, managed to read beyond the first page. There was an explicit reference by Mr Ashton of Exova to further analysis of the cladding system to be carried out in a later issue of Exova's report, but as everyone concerned was or should have been aware, that further analysis never took place, nor was there any other evaluation (least of all, in the local authority building control function) of the fire safety implications of the chosen combination and configuration of the materials used. This we submit must be the central and perhaps shocking conclusion for the Inquiry to draw as it enters into its consideration of Phase 2 Module 2.

12. It is now necessary to re-state and analyse some features of the relevant regulatory regime, as it applied to the work at Grenfell Tower, and then to provide a detailed review of the evidence of the testing of the product supplied by the Company.

B. Regulatory Regime

1. The regulatory regime applies to the construction and refurbishment of a building and accordingly will be relevant to those who are responsible for building work. It does not apply to those who manufacture and supply materials, chosen by those who are involved in the building work. The suitability of a particular building product necessarily depends on the context in which it is used and it is those who design and carry out the construction and the refurbishment work who will have knowledge of that context. They can also reasonably be expected to have a detailed knowledge of the regulatory regime itself, which it would not be reasonable to expect of a manufacturer, particularly one established in another jurisdiction.

2. "Building work" in England and Wales is governed by specific building legislation, principally the:
   (1) Building Act 1984 ("the Act")
   (2) Building Regulations 2010 ("the Regulations")

3. The Act and Regulations (the provisions of which are mandatory) are supported by Statutory Guidance known as Approved Documents, which are approved and issued by the Secretary of State. These are guidance documents which indicate how the requirement *could* be met.

4. Section 1 of the Act enables building regulations to be made for a number of purposes with respect to the design and construction of buildings. These purposes include securing the health and safety of persons (rather than property) in and about the building.

5. The requirement of the Regulations in B4 reads, in part, as follows:

> "External Fire Spread
> B4. — (1) The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."

6. As a matter of statutory construction, the concept of adequately must mean adequately to achieve the statutory objectives. More specifically, therefore, in this particular statutory context, the term adequately must mean adequately to ensure a reasonable standard of health and safety in all the circumstances, and to ensure that as necessary, occupants can either stay-put in their residence thanks to effective compartmentation, or if this is not possible can exit or be evacuated from the building safely in the event of fire.

7. Matters such as effective compartmentation (a necessary pre-condition of the efficacy of a stay-put policy), the presence of fire detection systems, fire alarms, means of escape, suppression systems and other factors relating to the context in which the application of B4 is being considered are relevant when applying those provisions and assessing adequacy.

8. Part B comprises a package of statutory measures designed to ensure the safety of occupants in the event of fire. As such, they should be interpreted and applied collectively.

9. Guidance to the Regulations is provided by documents approved and issued by the Secretary of State. The Guidance relevant to Part B is known as Approved Document B. Relevant parts of Approved Document B were at paras. 12.5 to 12.9.

10. It can be seen from those passages, and in particular from para 12.5, that the Guidance proffered, in broad terms, two principal routes to compliance when designing a cladding system:

    (i) The first is that the external walls meet the guidance given in paras. 12.6 to 12.9. Para. 12.6 suggests that the "external surfaces of walls" should meet the provisions in Diagram 40. In so far as the external wall is over 18 metres, Diagram 40 suggests that the external wall surface classification should be National Class 0 or European Class B[1]. In addition, and of importance, para. 12.7 suggests that in a building with a storey 18 metres or more above ground level "any insulation product, filler material (not including gaskets, sealants and

[1] The reasoning behind the parallel being drawn between national class 0 and EN class B (it is understood) was to enable European manufacturers to import products into the UK without the requirement for them to carry out a UK specific test, which had proved difficult for them and could have been considered as a trade barrier. Whilst a result below an EN B did not mean that class 0 could not be achieved, the decision was taken that a B would always mean that the product would achieve class 0, and as such no further testing was required.

similar) etc. used in the external wall construction should be of limited combustibility". This route to compliance is known as the "linear route".

(ii) The second possible route to compliance which is expressly contemplated by Approved Document B is that the "external walls" should meet the specified performance criteria using full scale test data from the British Standards (BS8414 1 and BS8414 2). It was the responsibility of builders, architects and specifiers on a particular project to ensure that the requisite systems testing had been carried out. The testing is of a particular mocked-up cladding system which would only be applicable if the system were to be replicated.

11. It is clear that those responsible for designing and constructing the external envelope at Grenfell Tower did not follow either of these two routes to compliance. In particular, we would observe that the linear route to compliance would clearly not have been available because the insulation was not of limited combustibility. In consequence, the compliance of the new cladding system at Grenfell Tower could not in accordance with the express terms of Approved Document B have been determined by the fire rating of any individual product but had to depend on an assessment of the external envelope as a whole.

12. Two other main methods of compliance with the Regulations have been recognised by the industry as a legitimate alternative means of ensuring compliance with the mandatory statutory requirements. This was ultimately confirmed and evidenced by Technical Guidance Note 18 ('TGN18'), produced by the Building Control Alliance (BCA).[2] The BCA included representation of the regulatory authorities responsible for Building Control.

13. One of the further routes to compliance identified by BCA TGN18 involves a so-called desktop study. A desktop study should be carried out by extrapolating the results of the very same systems tests described in the second compliance method of Approved Document B, and applying those test results to similar configurations. As stated in BCA TGN18, a desktop study should "be supported by test data from a suitable independent UKAS accredited testing body" and thus this route to compliance "may not be of benefit if the products have not already been tested in multiple situations / arrangements." There is

[2] Building Control Alliance Technical Note 18 Use of combustible materials on residential buildings Issue 1 June 2015 (CEL00002347). Although issued in June 2015, this clearly reflected existing practice.

no evidence that those responsible for the design and refurbishment of Grenfell Tower conducted a desktop study of the particular configuration of ACM material and insulation installed on the building or that there was historic data available to support a desk top study.

14. Finally, in appropriate circumstances, the fourth route to compliance may be through a holistic fire-engineering assessment. Such an assessment must take into account the design features of the building (including its construction and equipment) as a whole, including effective compartmentation, active and passive fire-prevention mechanisms, egress options for residents, and more. It is plainly not enough simply to look at the performance of the cladding system, let alone any one particular element in it. Once again, there is no evidence that those responsible for the refurbishment of Grenfell Tower employed an holistic fire engineering approach. Indeed, the many deficiencies in the building would seem to make clear that no such approach was adopted.

15. Even if, as it has been suggested, a cladding system containing ACM PE could not pass a BS 8414 systems test, it could nevertheless be used above 18 metres where a holistic fire-engineering assessment showed that the features of the building as a whole allowed it. Approved Document B itself supports the proposition that a holistic fire engineered route is an alternative but nonetheless legitimate route to compliance. It also confirms the description above as to what was required when opting to employ an holistic fire engineering approach to compliance. Indeed, in some circumstances this will be the only way to achieve the statutory objectives. At para. 0.30 to 0.32 in the "General Introduction" section of Approved Document B Volume 2, under the heading "Fire safety engineering", the document states the following:

> "0.30 Fire safety engineering can provide an alternative approach to fire safety. It may be the only practical way to achieve a satisfactory standard of fire safety in some large and complex buildings and in buildings containing different uses, e.g. airport terminals. Fire safety engineering may also be suitable for solving a problem with an aspect of the building design which otherwise follows the provisions in this document.
>
> "0.31 British Standard BS7974 Fire safety engineering in buildings and supporting published documents (PDs) provide a framework and guidance on

the design and assessment of fire safety measures in buildings. Following the discipline of BS7974 should enable designers and Building Control Bodies to be aware of the relevant issues, the need to consider the complete fire safety system and to follow a disciplined analytical framework."

16. The four routes to compliance with Part B4 of the Regulations were recognised in the Government Consultation paper on amendments to statutory guidance on assessments in lieu of test in Approved Document B (Fire Safety), dated April 2018.

17. Dr Lane has made clear that she did not consider industry guidance for the purposes of her initial report (para 2.7.8) (BLAR0000001). Such industry guidance, which is an important aspect of understanding how the regulatory regime worked and was applied by those working in the construction industry at the time, would therefore not have been taken into account in the Phase One report issued by the Inquiry.

18. The role of the Company was essentially to supply a product which required fabrication before installation for use in a particular construction context. It was the responsibility of others to decide whether or not to choose that product for a particular project; how to specify and utilise that product in the construction or refurbishment of Grenfell Tower; how to carry out the detailed design; how to fabricate the product; how to fit it to the external surface of the Tower; what other components to combine it with; and, in every other respect, how to carry out the refurbishment. It was also the responsibility of others to take appropriate steps to demonstrate compliance with Part B4 of the Regulations.

19. The relevant regulatory regime applied to the construction or refurbishment of Grenfell Tower. It did not apply to the sale of one component of the cladding system. Those professionally involved in the construction or refurbishment of a building are expected to ensure that the combination of materials chosen for a particular project meets the stipulations in Approved Document B, or is otherwise subject to an accepted method of compliance such as a holistic fire engineering assessment. Importantly, the supplier of an individual product not only would be entitled to assume that this would be done, but also would have insufficient access to the full construction and/or refurbishment plans to independently confirm compliance, even where it is minded to do so.

20. It is clear that those who were responsible for the design and the construction of Grenfell Tower failed to appreciate the regulatory regime and indicate how they complied with it. This was primarily due to their failure to analyse the issue of compliance as already explained. It may however have been partly as a result of the failure of the regulatory regime itself. Dame Judith Hackitt herself found that the system for ensuring fire and structural safety for high rise buildings in the UK was not fit for purpose. By way of an example, criticisms have been made surrounding the lack of clarity in Approved Document B (as was also noted in the inquest following the fire at Lakanal House, where it was described as "a most difficult document to use"). The recent extensive changes which have been made to the regulatory regime by the UK government also demonstrate the deficiencies with the system that was in place at the time of the Grenfell Tower refurbishment. It is however clear that if those working within the UK were finding it difficult to understand and apply the regulatory regime, then it would be quite unreasonable to suggest that a French entity should have any better of knowledge of the intricacies of that regime. It was not within the Company's knowledge that any particular UK entity or individual working on the Grenfell project was making compromised decisions in respect of the refurbishment, or failing to comply with the relevant regulatory requirements, nor should it have been. Consequently the Company was not in a position to determine if the state of the UK regime was such that continued sale of ACM PE was problematic, and it was entitled to rely on the fact and belief that its product would be used in a safe manner in accordance with the relevant statutory building controls. Although the refurbishment works incorporating the installation of a cladding system at Grenfell Tower failed to achieve compliance, it cannot be inferred from this that any and all construction projects with cladding systems including ACM PE would have failed in that respect.

21. It is possible that a building incorporating ACM PE but designed to be in compliance with the regulatory regime, and including all appropriate features such as sprinklers, cavity barriers and non-combustible insulation, would have been found to be in compliance.

22. In relation to the location of cavity barriers with respect to external walls, Dr Lane, in her opening presentation at slide 211[3], identified where cavity barriers should be located as per the guidance in Approved Document B.

23. It can be seen from the diagram within that slide that cavity barriers should be installed horizontally and vertically to close around openings such as windows.

24. The diagram in slide 211 of Dr Lane's presentation also shows that cavity barriers should be installed horizontally in line with every compartment floor, i.e., every floor.

25. Diagram 33 of Approved Document B shows that these cavity barriers should extend into the cavity so that there is a horizontal barrier within the cavity, level with the compartment floor.

26. The diagram provided by Dr Lane in her slide 211 also shows that cavity barriers should be installed vertically in line with every compartment wall, i.e., in between dwellings.

27. Accordingly, there should be a barrier preventing fire accessing the cavity in the first instance.

28. Additionally, in the event that a fire does enter the external wall cavity, it should be inhibited from spreading in the cavity.

29. Section 9.13 of Approved Document B provides that every cavity barrier should be constructed to provide at least 30 minutes fire resistance.

30. Section 9.15 of Approved Document B also provides that cavity barriers should be fixed so that their performance is unlikely to be made ineffective.

31. The fact that it is possible for a building to be designed in compliance with the regulatory regime is shown by the evidence as to the Taplow fire.

---

[3] See GTI website, 'Barbara Lane, Grenfell Tower Inquiry Opening Presentations' (18 June 2018) < https://assets.grenfelltowerinquiry.org.uk/documents/Dr%20Barbara%20Lane%20-%20presentation.pdf>.

ARC00000756_0011

32. The cladding system on the building at Taplow comprised Reynobond ACM PE cladding (rivet fabrication) and rock wool insulation. The fire did not spread across the outside of the building because of the cladding system used. The precise features in the cladding system and construction of the building, most notably the fire breaks, contained the fire to a small area.

33. Following the fire at Grenfell Tower, CEP issued a statement dated 23 June 2017 in which it referred to the fire at Taplow on 17 January 2012 (nearly three years prior to the orders being placed for materials for Grenfell Tower). CEP's statement noted that the fire at Taplow did not spread and placed emphasis on the use of the mineral fibre insulation, which was used in combination with the Reynobond ACM PE (ARC00000234).

34. Following the fire at Taplow, Harley produced an incident report (incident report form 1) in relation to the fire (HAR00010169) dated 17 January 2012.

35. The report stated that the fire breaks designed by Harley prevented the spread of fire between floors (pgs. 4 and 6).

36. Harley prepared a further incident report in relation to the Taplow fire (CEP000003223) dated 23 January 2012.

37. Taplow involved a severe fire inside the flat of origin, but the fire did not spread across the façade of the building.

38. On pages 2 - 3 of this Harley report, it states that the fire in that case was contained from spreading to other floors by extensive fire breaks located at the head and cil of each window.

39. On page 15 of the report – within the conclusion section – it states that "it is however apparent that the design of the façade and fire stops has unquestionably worked well, as despite the severe heat the extremes of the damage have been compartmentalised within the flat and a progressive tower block fire has not occurred".

C. Testing

1. It is necessary to establish some key points relating to methods of testing.

National Class

2. Testing under BS476 Parts 6 & 7 is testing in relation to an unfabricated sample of the product. It is this product that the Company manufactures and supplies.

3. Testing under BS476 Parts 6 & 7 does not involve a test of the fire performance of a fabricated product incorporated into a particular system.

4. NC0 is a classification in relation to the unfabricated product.

EN Classification

5. The relevant reaction to fire tests required to achieve a Class B, C or D standard under EN 13501-1 are the single-flame source test EN ISO 11925-2 and the single burning item test EN 13823.

6. In relation to the single-flame source test EN ISO 11925-2, in broad terms, this test involves subjecting an unfabricated sample of an ACM panel to direct impingement of flame.[4] The flame is directed onto the external surface and an uncovered edge of the sample. 6 specimens of the product are tested in each relevant flame application position. In order to achieve a Class B, C or D under EN 13501-1, the sample must be subjected to a flame application of 30 seconds.[5] Where a sample is subjected to a flame application of 15 seconds, then the highest class that the panel can achieve under EN 13501-1 is a Class E.[6]

[4] Barbara Lane, 'Phase 1 Report – Appendix F, Reaction to Fire Tests and Classifications' ('BL Appendix F'), paras 7.3.34-7.3.38.
[5] Ibid, para 7.3.39.
[6] Ibid, para 7.3.40. See also Figure F.4 'Test results requirements to classify a material to BS EN 13501-1'.

7. The results of the single burning item test EN 13823 are used, together with the results of the EN ISO 11925-2 test, for determining class B, C or D in accordance with EN 13501-1.[7]

8. In broad terms, the EN 13823 test is a test of the panels in a particular mocked-up system. The system in which the panels are assembled may vary from one test to another – not just in terms of the method of fixing (e.g., rivet or cassette), but also in terms of the substrate used, the size of the cavity, the particular arrangement of the panels and the size of the joints (i.e. the size of the gap between panels).

9. A complete EN 13823 test requires at least 3 specimens of the product to be tested. An average of these test results is used to determine a classification.

10. So if, for example, an EN B classification is achieved, it shows that the product is capable of achieving an EN B in a particular system when fabricated in a particular way.

11. Given the nature of EN testing, a classification such as EN B cannot be treated as achievable in all circumstance.

12. Indeed, because the EN 13823 test relates to the testing of a product fabricated in a particular way in a mocked up system which may vary from one test to another, two or more EN classification reports can co-exist in relation to the same product at the same time.

13. It follows, therefore, that an EN classification report does not supersede an earlier report. Indeed, an EN classification report does not normally state that it supersedes an earlier EN classification report.

14. It will be seen that in 2005 and 2011, panels of the product, configured in a particular mocked up system, achieved EN B. As explained earlier, this shows that the product was capable of achieving an EN B. Although subsequent EN testing involving the

[7] Ibid, para 7.3.14.

product, in which the particular mocked up systems will have varied, did not achieve EN B, this is not inconsistent with the fact that in 2005 and 2011 the EN B was achieved and therefore that the product was capable of achieving EN B. The variable was not the product, it was the system into which it was incorporated.

D. The BBA Certificate

1. It is now necessary to provide an analysis of the BBA Certificate - including in particular the limitations of the representations contained therein - and of the circumstances in which it came into existence.

2. Insofar as behaviour in relation to fire is concerned, the BBA Certificate did not go further than to certify as to the surface of an unfabricated panel, and contained a range of caveats as to the fire performance of a fabricated panel in a particular cladding system.

3. The first page of the Certificate describes the panels as "aluminium/polyethylene composite" and states that a panel may be regarded as having a class 0 surface.

4. Immediately following this it refers the reader to section 6.

5. Section 6.1 states that when a sample of a standard i.e PE grey/green product was subjected to an EN test, it achieved a B classification. That product was therefore capable of achieving an EN B classification. This did not mean that an EN B classification would be achievable in all circumstances and irrespective of the method of fabrication and the other features of the cladding system.

6. Section 6.2 then deals separately with the testing of a fire-retardant sample of the product.

7. The test reports referenced in Sections 6.1 and 6.2 were provided to the BBA. Although not stated in the BBA Certificate, the tests referenced in sections 6.1 and 6.2 were of systems with a rivetted fixing. This is clear in the test reports.

8. Section 6.3 then states that both products may be regarded as having a Class 0 surface in relation to Approved Document B.

9. Section 6.4 states that those performances may not be achieved by other colours.

ARC00000756_0016

10. Section 6.5 states that for resistance to fire, the performance of a wall incorporating the product is not covered by the Certificate. The BBA Certificate at section 6.5 also states that the performance of a wall incorporating the product can only be determined by further tests.

11. The Certificate at section 6.6 states that cavity barriers should be incorporated behind the cladding as required by national Building Regulations.

12. Section 6.6 also states that particular attention should be paid to preventing the spread of fire within a building breaching the cladding system through windows and door openings.

13. It follows that the BBA Certificate is cautiously worded. The reference to Class 0 is expressly related to the surface of the product, and the Certificate as a whole limits itself to specific examples of the product. Moreover, clear advice is given that the fire resistance of a cladding system incorporating the product is not covered by the Certificate but must be subject to further testing.

14. The caveats and limitations in the BBA Certificate are consistent with the relevant guidance contained in Approved Document B.

15. Approved Document B Vol 2 Appendix A Para 16 provided that any reference in relation to the surface spread of flame should be carefully checked to ensure that it is suitable, adequate and applicable to the construction to be used.

16. Approved Document B Vol 2 Appendix A Para 16 went on to state that small differences in detail, such as thickness, substrate, colour, form, fixings, adhesive etc, may significantly affect the rating.

17. The assertion in section 6.3 of the Certificate (see paragraph 13 above) that the product may be regarded as having a Class 0 surface in relation to Approved Document B is plainly a reference to paragraph 12.6 of the Guidance and Diagram 40. These provisions advise that "the external surfaces of walls should meet the provisions in Diagram 40". Diagram 40 itself advises that above 18 metres the external wall surface classification

should be "Class 0 (national class) or class B-s3, d2 or better (European class)". Hence, the Certificate was simply setting out that, since the product was capable of achieving the requisite European Class, it could also be treated for the purposes of compliance with the Guidance as achieving the requisite National Class.

18. It is acknowledged that under European testing some fabricated versions of the product failed to achieve a B Classification. However, for the reasons set out above this was not inconsistent with the NC0 certification in the BBA Certificate, this being a certification relating to the surface of the product, which in a particular system and when fabricated in a particular way had been shown to be capable of achieving a B Classification.

19. The BBA Certificate was issued following a lengthy period of wide-ranging discussion between the Company and the BBA.

20. In the course of that discussion, it was agreed that the Certificate would relate to the relevant ACM product (PE and FR) rather than to a sample cladding system containing a number of different components of which the ACM would have been but one.[8]

21. It was made clear to the BBA in the course of these discussions that the ACM panels, as manufactured, comprised two parallel sheets of aluminium enclosing a core, the core being either polyethylene or fire retardant.

22. It was made clear to the BBA in the course of these discussions that for the purpose of fixing the ACM panels to the exterior of a building two possible methods could be employed, namely by means of "Rivet" i.e. by the use of Rivets to attach panels directly to a subframe, or "Cassette" i.e. to fabricate the panels by folding so that they could be hung upon the subframe. These were however alternative methods of fabrication and fixing, and did not affect the nature or composition of the product itself.[9] The unorthordox fabrication of the Reynobond product used on a substantial part of the façade of Grenfell Tower (that is the crown and columns which accounted for

[8] See Albon 1st Statement p5, MET 00040807.
[9] See the written application for the Certificate (MET00040821) at p7 and the references to the prior French certification for rivet (2/04-1081) and cassette (2/01-845), such references also being cited in the Certificate itself at p3.

ARC00000756_0018

approximately 33% of the external façade of floors 4-23 of the tower) are not of course mentioned in the Certificate and could never have been, as the Company did not know that this was a potential application of its product, and could not have known, it being peculiar to Grenfell Tower.

23. Since the Certificate was to confirm that the external surface of the product could be classified as "National Class 0" for the purposes of Diagram 40, it was neither necessary nor relevant to provide information on the fire performance of the core material standing alone, let alone information as to the fire performance of the product when fabricated or fixed in a particular manner (eg rivet/cassette).

24. The BBA were nonetheless provided inter alia with the following fire performance information before issuing the Certificate, namely

    a) Test results relating to the aluminium surface which confirmed the NC0 Classification and
    b) A test Certificate from the CSTB which showed that the standard product in a particular fabrication and in other particular test conditions was capable of achieving EN Class B.[10]

25. The BBA itself determined that on the basis of this information it was appropriate to issue the Certificate in the terms in which it was issued, and in particular the BBA itself determined that the product could be regarded as having a Class 0 surface.

26. The BBA consulted various external bodies, including the CSTB, in order to check and confirm that it was justified in issuing the Certificate in these terms.

27. In the light of the express warning in Section 6.5 of the Certificate, no-one could reasonably or justifiably assume that the performance of any wall incorporating the product, whether fixed by rivet or as cassette, would necessarily correspond with the test results provided.

[10] See Warres 132316/7 (BBA00000050/53), CSTB RA05-0005A (GTID00000357).

ARC00000756_0019

28. Until 2014/15, the BBA left the surveillance of the manufacture of the product and the applicability of the Certificate to the CSTB through standard arrangements which it had with them.

29. Such decisions as were made either by the CSTB and/or by the BBA with regard to the methods and/or level of surveillance and/or with regard to the provision of information to the BBA arising from such surveillance were matters for agreement as between the CSTB and the BBA and were not matters over which the Company had any control.

30. Since the Certificate related to the reaction to fire of the surface of the product, and the potential spread of fire across that surface, there was on any view no need for additional fire performance information relating to the surface to be provided, let alone highlighted, following the issue of the Certificate, unless the fire performance of the surface changed, which it did not.

31. As regards an EN test result relating to the fire performance of the product in a particular cladding system, which demonstrated and could demonstrate only that the product was as part of that system capable of achieving a particular EN test result, there would have been no need to identify or highlight any further test results, unless any such result demonstrated that the product itself was incapable of achieving that result.

32. In any event, it would have been open to the CSTB as part of its surveillance function to communicate test results to the BBA (the test results referenced in paragraph 18 above having been carried out by the CSTB and published on its website).

33. Equally the BBA could have requested such results to be provided to them, which it did not.[11]

34. Given that the results were available on the CSTB website, it is reasonable to infer that at the time everyone assumed that, if such results needed to be examined, it was open to all concerned to do so.

[11] See Albon 1st statement p4 MET 00040807.

35. If the BBA neither requested nor checked such results, that must be because, given the terms and express limitations of the Certificate, it saw no need to do so.

36. It was only in 2014 that the BBA decided to undertake its own inspection of the manufacturing process, and on this inspection the BBA found that the production process was robust and well documented.[12]

37. With regard to BBA visits to the Merxheim site to inspect the manufacturing process, one such visit took place in August 2015. The colour of the core had been changed from translucent to black in May 2015, and this would have been apparent to the BBA at the time of its August site visit.

38. After the fire at Grenfell Tower, the BBA was subject to assessment by UKAS, who reported on 12th July 2017 that "the Certificate content was supported by the information included within the certification records".[13]

[12] See BBA0001074-0177.
[13] See BBA00010733-0003.

E. Other Evidence

1. From the outset, the Company has endeavoured to cooperate with the Inquiry, both as regards the provision of information and as regards oral evidence. The Inquiry has received a series of witness statements, together with many tens of thousands of documents, initially given to the Metropolitan Police (acting under a European Investigation Order), and subsequently made available by the police to the Inquiry.

2. It is clear from the evidence to date that the arrangements for the supply of the ACM panels were made on the Company's behalf by its UK representative, Deborah French. The objective features of these arrangements will we anticipate hardly be in dispute, including the fact that Ms French made available a copy of the BBA Certificate. There can be no doubt that the decision as to the choice of product and method of fabrication was a matter for others and not for her.

3. In the event, we know that the information provided by the Company as to methods of fabrication was not consulted by those involved in the Grenfell Tower refurbishment project. As a result, there were numerous departures from this information as outlined by Barbara Lane in her Phase 1 report dated 12 April 2018, Section 8 pages 845-855. On the Tower itself, only two thirds of the external surface comprised ACM PE, and of that at least fifty percent was comprised of panels fabricated in a fashion which can only be described as unorthodox. Indeed, the ACM PE used on the columns and crown of the tower were fabricated in a way which was peculiar to Grenfell Tower, and which could not have been anticipated by the Company. In relation to the more orthodox fifty percent, even that was utilised within an irregular construction. As stated above, there were numerous departures from regulatory guidance including matters such as the absence of cavity barriers around window openings etc. Again, these deficiencies are not something which the Company could have been expected to anticipate.

4. Legal submissions as to whether there was any duty on the Company to go further than it did to warn prospective purchasers will be placed before the Inquiry in due course, but it is not accepted that the use of cassettes would necessarily lead to an unsafe, let

ARC00000756_0022

alone non-compliant, result. CEP have indicated[14] that the fire in 2010 at Sudbury House, Wansworth, a 24 storey tower, clad in ACM PE fabricated as cassettes, with mineral wool isulation, was "contained" (like the fire at Taplow House where the panels were fabricated as rivet).

5. In their statements to the Inquiry, certain Core Participants have suggested that the Company's employees were or must have been aware that ACM PE panels may have been *capable* of contributing to the spread of fire if the products were mis-used within a cladding system that was not fit for purpose. Without foreshadowing the evidence which will be heard in module 2, the following propositions are, it is submitted, beyond dispute.

6. Firstly, cladding systems came under increasing scrutiny because a number of fires had developed across the world involving such systems, even though the precise details of those systems were not known. However it was also the case that the product was capable of being used safely, even for high-rise residential applications, if the appropriate cladding system was designed and adequate safety precautions were incorporated into the building works. Indeed it is important to recognize that a product is not inherently dangerous, nor unfit for sale, merely because that product may be inappropriate for certain applications or may be unsafe if it is mis-used.

7. Secondly, even if there was the potential for mis-use of the product, that did not result in any duty on the supplier of the product. It was reasonable for a Company to conclude that it could rely on building regulations in the markets into which it sold, as well as the judgment of the professionals to whom it sold the products, to ensure that the product was being used appropriately for particular applications.

8. Thirdly, with the benefit of hindsight, we now know that the product was mis-used at Grenfell Tower as one component of a refurbishment that failed, in many ways, to comply with applicable regulations. But that is a fact that neither the Company, nor indeed any manufacturer of a single component part of a cladding system, could have been expected to know at the time. It is also worth noting that, at the time the product

[14] CEP00003010

was sold for use as one component of the Grenfell Tower, there was no awareness of any fires involving Reynobond PE that had resulted in any loss of life or significant injuries.

F. Conclusion

1. We will invite the Inquiry in due course to conclude that the principal cause of the Grenfell tragedy was failure, by those responsible for the refurbishment of the Tower, holistically to consider fire safety as mentioned above. It may well emerge that a subsidiary cause was the lack of clarity of the regulatory regime, an issue to which the Lakanal House Inquest had already drawn attention. We will urge the Inquiry against this background not to criticise a single product manufacturer for continuing to sell a product which any responsible purchaser would know to contain a combustible core.

ARC00000756_0025

Appendix

Industry knowledge of the characteristics of ACM PE prior to the Grenfell Tower Fire

1. Introduction

1.1 This note summarises materials and documents which demonstrate that prior to the Grenfell Tower fire, there was a general awareness and knowledge within the building and fire safety industry of the characteristics of ACM PE, and the design and use considerations which ought to have been considered when selecting an ACM PE product for use on a building at height.

1.2 The content of this note is based on a number of sources, including:

1.2.1 Information disclosed by the Inquiry, including correspondence and documents from other core participants; and

1.2.2 Industry guidance documents.

1.3 Whilst not detailed in this note, the above information is in addition to the following general points that can also be made to support the position that the characteristics were well known:

1.3.1 generally, one ought to be aware that a product containing a plastic element could melt in a fire. As such, any potential fire safety considerations would need to be considered when incorporating the product into a rainscreen cladding system;

1.3.2 Professor Bisby:

1.3.2.1 has conceded that he would expect competent fire professionals to be aware of the characteristics of PE: "the fact that thermoplastic polymers such as PE present particularly challenging behaviours as regards its reaction to fire has been well known (and documented) for decades, and this fact therefore cannot, in my opinion, be considered at all surprising

by any competent fire safety professional" (para 431, Section 4.10.1.1);

1.3.2.2 comments that "*decades old literature is available specifically dealing with the relevant reaction to fire properties of PE*"; and

1.3.2.3 explains that the table he refers to in his report which sets out the properties and characteristics of PE is "*sourced almost exclusively from the SFPE Handbook of Fire Protection Engineering; this is amongst the most widely used core reference texts available to fire safety professionals*".

1.3.3 There have been a number of fires around the world involving buildings clad with ACM PE. Competent fire safety and design professionals should have been aware of such fires. It is however noted that they would not necessarily have the full background and details of the specific designs and safety systems, e.g. stay put policy.

2. Industry Knowledge – Information from Inquiry disclosures

2.1 Certain documents released by the Inquiry indicate that industry could be said to be generally aware of concerns around the use of ACM PE, and had knowledge of its characteristics in a fire. These include documents in Tranches 5, 9, 46 and 58.

Tranche 5

2.2 Tranche 5 contains various documents disclosed by Celotex. Included in these is an internal email exchange (dated 1 November 2013) in relation to the difficulties Celotex faced in demonstrating that its product (which we believe must be FR5000) could be safely used with a standard ACM panel. The email exchange includes a reference to the fact that such a panel would "*melt and allow fire into the cavity*" (Document reference CEL 00000718).

2.3 In an internal Celotex email dated 14 June 2017, in which consideration is given as to whether Celotex supplied the insulation on Grenfell Tower, it states "*depending on the fire class of the aluminium cassette, its [sic.] probable the cladding would have fallen away allowing fire spread up the façade causing the system to fail.*" (Document

ARC00000756_0027

reference CEL00000534). The fact that such a comment was made so soon after the fire, suggests that it was readily available knowledge.

2.4 In an email exchange between Neil Crawford (Studio E) and Terry Ashton (Exova) Neil Crawford states that "*metal cladding always burns and falls off, hence fire stopping is usually just to the back of the cladding line*" (Document reference SEA00013049).

2.5 Neil Crawford was questioned on this email and comment as part of his oral evidence to the Inquiry:

"*my question was: did you ever raise with anybody,*

13 whether Harley or Rydon or within Studio E, your

14 experience, as identified in this email, that metal

15 cladding always burns or melts and falls off?

16 A. I think it's self-evident. I think most people in the

17 industry would realise that an aluminium panel at some

18 point would fail. Aluminium I think melts at about

19 650 degrees. It isn't instantaneous, but it will fail,

20 the same way glass will fail. Well, glass will fail

21 long before the aluminium, but ultimately it fails and

22 ultimately it melts."[15]

Tranche 9

2.6 In April 2017, the London Fire Brigade wrote to RBKC highlighting the possible contribution of external cladding systems to external fire spread on buildings. The letter followed a fire at Shepherd's Court, Hammersmith in 2016. (Document reference CST00002633).

[15] Day 10 transcript, Page 158.

ARC00000756_0028

Tranche 46

2.7 As part of the Inquiry's disclosure of documents in Tranche 46 there is a copy of a report prepared by Exova Warrington Fire Aus Pty Ltd entitled "Fire Safety Engineering Design of Combustible facades. A report from the Alternative solution compliance resource for fire safe timber design project" and dated December 2011 (Document reference INQ00011269). The report was prepared for Forest & Wood Products Australia.

2.8 The report makes the comment that modern buildings contain "high volumes of plastics… resulting in greater flame extension from the fire enclosure and increased risk of external fire spread". More generally, it also notes the potential for fire to "leapfrog" where there is an open window. It would be perhaps odd if the report had not been shared between the different Exova regions as its work on such issues would not be restricted to UK/Australian markets. Many of the wider deficiencies in the design and construction of Grenfell Tower are alluded to in the Exova report and therefore would have been understood by the fire safety community.

Tranche 58

2.9 When Celotex was looking to carry out a BS 8414 system test using RS5000 it became apparent to them that it was difficult to obtain a successful test using ACM cladding "*we cannot seem to find or design a suitable barrier in which we have enough confidence that it can be used behind a standard ACM panel which we know will melt and allow fire into the cavity*". See BS 8414 summary paper (Document reference CEL00010040) for a factual summary of relevant emails and comments in relation to the Celotex testing.

3. <u>Industry Guidance and Documents</u>

Centre for Window Cladding Technology ("CWCT")

3.1 A meeting of the "fire group" of the CWCT was held on 2 July 2014. The CWCT describes itself as "*a leading information provider and trainer in the field of building*

envelopes and glazing. It is an industry funded Centre... [and] sets industry Standards and publishes both standards and guidance[16]".

3.2 A number of topics were discussed, including the use of ACM PE and its characteristics. The meeting minutes state that "the normal material consists of two skins of aluminium, approximately 0.5mm thick, separated by a polyethylene core, 2-5mm thick". The minutes go on to confirm that "this material generally achieves a reaction to fire classification of Class 0 or Class Bs1d0". There is then a reference to "major fires in buildings in various parts of the world including the Middle East and France where ACM materials have been used for the cladding with the ACM responsible for external fire spread".

[16] http://www.ewet.co.uk/home.htm

ARC00000756_0030