IN THE MATTER OF THE GRENFELL TOWER INQUIRY

OPENING STATEMENT FOR MODULE 1 OF PHASE 2
ON BEHALF OF HARLEY FACADES LIMITED

Introduction

1. This is the Opening Statement of Harley Facades Limited ("Harley") in respect of Module 1 of Phase 2 of the Inquiry into the tragic fire at Grenfell Tower in the early hours of 14th June 2017. It addresses in broad terms the Module 1 issues identified in a letter from the Inquiry dated 22nd July 2019 about which Harley have knowledge and are able to assist with. Harley intends to add to this written statement by way of further oral submissions during the opening week of Module 1.

2. Harley and all its employees wish to express their sincere condolences to all of those who were affected by the terrible fire at Grenfell Tower. In the early hours of 14th June 2017, they turned on their televisions and watched in horror as the Tower burned. At the time, they had no idea and no reason to believe that the principal materials used in the building envelope, namely the Reynobond Aluminium Composite Material ("ACM") and the Celotex RS5000 insulation, would behave as they did in the event of a fire. The Reynobond ACM had been certified as Class 0 {HAR00010214} and the Celotex insulation as suitable for buildings over 18 metres {CEL00000539}. It is only in the course of the disclosure for this Inquiry, and, in particular, of expert reports and evidence from the manufacturers of the rainscreen cladding (Arconic) and the insulation (Celotex), that Harley now understand that their confidence in these materials and their certification was badly misplaced. Harley were not alone. At no stage in the lifetime of the Grenfell Tower refurbishment project ("the Project") did anyone raise any question or concern about these materials, which were

specified in the National Building Specification ("NBS") for the Project, and known to all. This included the lead designers and architects, Studio E; the main contractor, Rydon; their fire consultants, Exova; and their Clerk of Works, as well as the manufacturers, Arconic and Celotex, and the suppliers of the materials, SIG Limited ("SIG") and CEP Limited ("CEP"). And finally, this included Building Control, who were charged with the responsibility for assessing whether the refurbishment complied with the Building Regulations and Approved Document B ("ADB").

Harley's Role

3. At the time of Harley's involvement in the Project, it had around 16 employees. As is typical of a company of its size, Harley operated as a managing subcontractor for external façades. It did not undertake fabrication of the components of the external façade or carry out installation with its own labour. Instead, it sourced materials, coordinated supply and fabrication of the external façade, and subcontracted installation, which it managed. Harley had an in-house design resource, but depending on capacity would also subcontract the production of working drawings.

4. Harley's first involvement in the Project was on 27th September 2013, when Ray Bailey (a Harley Director) and Mark Harris (Harley's Commercial Manager) met Bruce Sounes and Tomas Rek, both of Studio E, the architects engaged by KCTMO (the client) for the project. This was an informal meeting as at this stage. Harley had yet to tender for the Project let alone be appointed. During the meeting several aspects of the Project were discussed including available rainscreen products, interface details, work programme, access and budget. A number of cladding options were discussed including Zinc (Proteus HR) and ACM, as well as cladding configuration i.e. cassette versus face fixed. It appeared that at this stage Studio E had provisionally decided that the cladding would be zinc due to its appearance.

5. In July 2014, following the tendering process, budgeting discussions, and continuing correspondence in relation to choice of material and colour

configuration (KCTMO had yet to make a decision about these) Harley was formally appointed as the external façade subcontractor on the Project by Rydon Maintenance Limited ("Rydon"). Rydon were the Principal Contractor appointed by KCTMO. The lead designer for the Project, including for the external façade, was Studio E. The design for the external façade came from Studio E to Harley. These designs were then translated into working drawings by Harley, primarily through its subcontractor, Kevin Lamb of Bespoke Designs {HAR00010173}.

6. These Harley working drawings were progressed through the drawing approval process led by Studio E. As the drawings themselves show, Studio E would review the drawings and either amend or approve them for construction. This relationship is reflected within the NBS specification {SEA00000169}. In section H92 Rainscreen Cladding of the NBS, clause 210 reads as follows:

   DESIGN

   - Rainscreen cladding system and associated features: Complete detailed design in accordance with this specification and the preliminary design drawings and submit before commencement of fabrication.

   Section H92 Rainscreen Cladding of the NBS specification, clause 342 sets out Harley's design responsibilities which are as follows:

   CONTRACTOR'S DESIGN OF RAINSCREEN GENERALLY

   - Design responsibility: Determine sizes and thickness of panels and types, sizes and number of fixings to suit backing wall and the layout and details of supporting steelwork.

7. In terms of the completed detailed design produced by Harley in its working drawings (as per the NBS), there was nothing unusual about its features. This external façade design is one that is widely used throughout the cladding industry and systems that utilise this design concept are offered by a number of different companies.

8. It is important to note that Harley were neither subcontracted to carry out, nor involved in, any internal modifications to Grenfell Tower (save for the entrance way), including in relation to the internal window reveals. As noted in the Harley drawings, this aspect of the work was to be completed by others.

9. In order to fully understand Harley's role and responsibilities in relation to the Project, it is necessary to examine Harley's interactions with, and the responsibilities of, other parties in further detail.

The Architects

10. Harley did not decide what materials were to be used in relation to the rainscreen cladding and insulation. These materials were specified by the architects and lead designers, Studio E, in the NBS for the Project. In a project of this kind, the NBS document is the foundational document. The expectation, at least, is that it is assembled by the architect with the input of other specialist consultants, such as fire consultants as well as the Local Planning Authority and/or Building Control. Accordingly, in the case of Grenfell Tower, Harley's assumption was that the products specified for use in the cladding and the insulation of the rainscreen were suitable for the project. In this regard, it is notable that Paul Hyett appears to acknowledge that responsibility for ensuring that the materials specified in the NBS complied with the relevant building regulations and statutory guidance ultimately rested with Studio E (see paragraphs 4.2.27 {PHYR0000004_0036} and 4.4.45 {PHYR0000004_0113} of the expert report of Paul Hyett).

11. As set out above, individuals from Harley first met representatives of Studio E at a meeting on 27th September 2013. It is now apparent that various cladding options were being considered by Studio E prior to Harley's involvement in the Project. For example, email correspondence between individuals at Studio E, Alcoa (now Arconic) and CEP in April 2013 demonstrates that Reynobond products were under consideration even at that early stage {MET00019920_0035}. Similarly, Studio E drawings dating as far back as

2012 refer to the use of "Composite Zinc Panel: Quartz Zinc" - a product that comprises two sheets of zinc bonded to a polyethylene core {SEA00001586}. On 27th September 2013 - the day of the first meeting between individuals from Harley and Studio E - Tomas Rek sent an email to Paul Cousins of SIG, referring to discussions they had had the previous day, requesting a bigger sample of "NOVA COMPOSITE" - another product comprising zinc bonded to a low-density polyethylene core {SEA00008806}.

12. It was the understanding of the individuals at Harley involved in the Project at this early stage that there was a desire on the part of KCTMO to include options for alternative rainscreen cladding materials - including ACM - in the tender (see paragraph 18 of the witness statement of Tomas Rek {SEA00014278_0006}). Thus, the NBS produced by Studio E specified the use of "PROTEUS HR honeycomb rainscreen panel", but also required tendering parties to submit costings for Reynobond, Alucobond and "QUARTZ ZINC composite polymer panel" {SEA00000169_0064}. As such, the NBS was a 'prescriptive specification': Studio E prescribed the main products and materials that were to be used in the building façade. This can be contrasted with a 'performance specification', whereby the specifier simply sets out the basic design parameters and performance criteria they wish to be met.

13. Whilst, in relation to the rainscreen cladding products, costings were sought from tenderers for a selection of alternative products, all of those products were specified by Studio E. Harley provided quotations for these alternatives, as requested, on behalf of a number of tendering contractors {HAR00010163}. Which of those alternatives was eventually selected was, ultimately, a choice for KCTMO.

14. The insulation product that was to be installed within the wall build-up was also specified by Studio E. The product specified in the NBS was Celotex FR5000 {SEA00000169_0073}. As is now clear from the evidence provided by individuals at Celotex, FR5000 and RS5000 are, in essence, the same product (see paragraph 39 of the witness statement of Dean O'Sullivan {CEL00010027_0012}).

15. As with the Reynobond ACM, it is now apparent that Celotex FR5000 was identified by Studio E, with the assistance and input of others, as being a suitable product to use at Grenfell Tower, long before Harley became involved in the Project. For example, Studio E's Stage C Report - dated October 2012 - incorporated the M&E Stage C Report produced by Max Fordham, which referred to the use of Celotex FR5000 to achieve the desired insulation benefits {SEA00006429_0082}. By the time of its Stage D Report - dated August 2013 - Studio E had incorporated Celotex FR5000 into its proposed specification {SEA00008054_0029}.

16. Unlike the Reynobond ACM, Celotex FR5000 was the *only* product specified for use in the insulation of the building façade at Grenfell Tower {ART00002035_0073}.

17. In circumstances where the rainscreen cladding material was specified by Studio E, where it was a material with which Harley were familiar (see paragraph 24 of the witness statement of Ray Bailey {HAR00010184_0006}), where it was a material that was widely used and regarded as safe by the cladding industry (see paragraph 65 of the witness statement of Tomas Rek {SEA00014278_0017}), and where there was BBA certification indicating that that material was compliant (see the BBA certificate for Reynobond {ARC00000678}) it was plainly reasonable for Harley to proceed on that basis.

18. In circumstances where Harley were less familiar with the materials specified by Studio E, as was the case in relation to the Celotex FR5000, it was sensible that Harley should seek further information from the manufacturer of those materials. That was done and having obtained further information, which indicated that that material was compliant (see, for example, the product data sheet sent to Daniel Anketell-Jones on 21st January 2015 {CEL00000019} {CEL00000008}), again, it was reasonable for Harley to proceed on the basis that the materials specified by Studio E were suitable for use at Grenfell Tower.

19. As is made plain in the expert report prepared by Mr Hyett, in relation to ensuring the compliance of any and all materials specified in a foundational document such as an NBS, it is crucial that that is done prior to the tendering stage (see paragraph 3.8.6 of the Mr Hyett's report {PHYR0000003_0061}). Harley were entitled to proceed on the basis that that had been done by Studio E when compiling the NBS for the Project.

20. Beyond the specification of materials, Studio E - as the architects and lead designers on the Project - had an on-going duty to review and approve the work done by Harley to bring its (Studio E's) design for the building façade to fruition. All drawings and revisions of drawings completed by Harley, or those working on Harley's behalf, were approved by Studio E before being manufactured and installed. It is not accepted that Studio E's responsibility for reviewing and approving Harley's work was limited to an aesthetic or architectural review, as appears to be the suggestion of Neil Crawford (see paragraph 55 of the witness statement of Mr Crawford {SEA00014275_0023}). Instead, it is submitted, Studio E had a responsibility to review the work carried out by or on behalf of Harley, with a view to ensuring compliance with the relevant building regulations and guidelines (see paragraph 4.4.155 of Mr Hyett's report {PHYR0000004_0169}). In this regard, it is troubling to discover that the technical review processes adopted by Studio E appear to have been deficient (see paragraph 6.7.5 of Mr Hyett's report {PHYR0000006_0037}).

The Fire Safety Consultants

21. At the time of its involvement in the Grenfell Tower Project, Harley was aware that Exova Warringtonfire ("Exova") were instructed as the fire engineering consultants acting for Studio E (see paragraph 16 of the witness statement of Daniel Anketell-Jones {HAR00010149_0004}).

22. Again, it is now apparent that Exova's involvement in the Project far pre-dated that of Harley, with the former having first been approached by Studio E in April 2012 (see paragraph 3.11 of the witness statement of Terence Ashton {EXO00001621_0004}). It would also appear that Exova were made aware that

the Project would involve the overcladding of a high-rise block of flats in May 2012 {EXO00000474}. Shortly thereafter, Exova issued a fee proposal to Studio E which appeared to indicate that Exova anticipated providing Studio E with consultancy services that included *"determination of external fire spread issues and impact on architectural design"* {TMO10003885_0002}.

23. Although, at the time, Harley was not familiar with the full details of the work done by Exova for Studio E, it was generally understood within the industry that fire consultants formed part of the senior design team on any given project (see paragraph 26 of the witness statement of Mr Anketell-Jones {HAR00010149_006}). As such, in relation to the Project at Grenfell Tower, it was assumed that the design of the building façade, including the specification of the materials to be used in the façade, had been carried out with the input of Exova. It was also assumed that as experts in fire safety and fire engineering, Exova were competent to advise Studio E in relation to all aspects of the Building Regulations that touched on those issues, and particularly in relation to part B4 of the Regulations and ADB.

24. Contrary to those expectations, it now appears that Exova had little to no input in relation to the composition or design of the building façade proposed by Studio E, and that no advice was given in relation to the compliance of those proposals with the Building Regulations or ADB. Whilst all three iterations of the Fire Strategy produced by Exova indicated that *"the proposed changes will have no adverse effect on the building in relation to external fire spread"* {EXO00000518; EXO00000397; EXO00001328}, it would now appear that this was because Studio E did not provide Exova with information or documentation relating to the proposals for the building façade (see paragraph 4.9(D); 4.15 and 4.20 of the witness statement of Mr Ashton {EXO00001621}).

25. The first interaction that Harley had with Exova, albeit indirectly, related to a request for further information raised by Mr Anketell-Jones in September 2014 {HAR00003616}. This request, which was sent by Mr Anketell-Jones to a number of individuals at Studio E and Rydon Maintenance Ltd, was then

forwarded by Studio E to Mr Ashton of Exova by email on 18th September 2014 {SEA00011705}.

26. Once he had been provided with an initial set of Harley drawings and some Studio E drawings {EXO00001640}, Mr Ashton responded in an email to Mr Crawford of Studio E that *"If the insulation in the cavities behind the rainscreen cladding is combustible you will need to provide cavity barrier [sic] 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"* {EXO00000708}. Whilst there followed a suggestion by Mr Anketell-Jones that he did not consider that horizontal cavity barriers were required above the windows, because the proposed insulation was Class 0, Mr Ashton went on to explain that *"A material that has a Class 0 rating is not necessarily non-combustible"* {SEA00011730}. Although Mr Crawford forwarded this explanation to Mr Anketell-Jones, asking him to *"confirm [his] position in relation to Terry's comments"* {SEA00011730} it appears that there was no further email correspondence in relation to this request for further information. However, in later revisions of its drawings, Harley did include a cavity barrier above the window, broadly in line with Studio E's drawing 1279 (06) 120 {EXO00000806}, in Revision E of C1059-301 (compare {HAR00009727} with {EXO00000981_0003}).

27. Whilst there appears to have been some confusion about the application of ADB in relation to the positioning of cavity barriers, it is submitted that it was appropriate, given that confusion, for Mr Anketell-Jones to have sought clarification from Studio E and their fire consultants - Exova. As a result of that enquiry, cavity barriers were installed, broadly speaking, along compartment boundaries in accordance with ADB. Notably, despite being provided with a number of drawings, none of which featured cavity barriers around window openings, at no stage did Mr Ashton, or anyone else from Exova, indicate that cavity barriers were required around window openings in order to comply with ADB, or otherwise query their absence in the drawings provided to Exova.

28. Moreover, it is submitted that whilst it was reasonable for Mr Anketell-Jones to attempt to clarify the confusion in relation to the positioning of cavity barriers, ensuring that cavity barriers were designed in accordance with ADB was ultimately the responsibility of Studio E as the architect (see paragraph 5.4.25(g) of Mr Hyett's report {PHYR0000005_0062}).

Installation and Inspection of the External Facade

29. Once the materials were selected, Harley arranged for the fabrication and supply of the components of the external façade as per its working drawings and Specification Notes which were approved by Studio E. SIG supplied the insulation whilst CEP supplied the pre-formed cladding panels.

30. Due to production issues disrupting the supply of Celotex, SIG offered to supply Harley with Kingspan Kooltherm K15 as a substitute to help keep the project progressing. Kingspan Kooltherm K15 is described in its BBA certificate as being Class 0 {KIN00000454}. Whilst the test in ADB is one of "limited combustibility" again it was reasonably assumed that as the product was described as Class 0 in respect of "Behaviour in relation to fire" it was compliant and suitable for buildings over 18 metres. 276 m^2 of Kingspan K15 in 80mm was ordered {SIG00000013}.

31. Harley managed the installation of the external façade by Osborne Berry Installation Limited ("Osborne Berry"). These works were supervised and checked by Mark Osborne and Graham Berry: highly experienced installers with whom Harley had worked for many years.

32. Harley also carried out checks of the works through its Project Manager, Ben Bailey which he describes in his witness statement {HAR00010060}. Prior to the panels being installed these checks involved going up the mast climber and looking at the windows, the insulation, the cavity barriers and the cladding rails. In relation to the windows the following was checked: that the shelf angles were securely fitted and fixed at the correct centres to retain the window frame, that

the EPDM seal to the top of the head angle was applied to a good standard and to see if any gaps that would allow water ingress around the fixings were sealed. After the frames had been fitted, they were checked to see that that they were securely fitted, free from damage and that foam was applied along the whole length of the frame. The window jambs were checked to see that they had been sealed with EPDM to a good standard and the mastic seal was applied along the length of the window at the head and base and that the glass and gaskets (if the glass had been fitted at the time) were in good condition and weather bars and drain caps were fitted.

33. The insulation was checked to see if it was securely fitted and fixed to the building and that joints had been taped and secured. At the time, it was not known and had not been communicated that the edges of the insulations boards were to be taped. As Dr Barbara Lane notes in her report {BLAS0000008_0034} the Celotex Rainscreen Cladding Specification Guide does not state that the edges of the insulation boards are to be taped for any reason let alone for fire safety reasons {HAR00010322}.

34. In relation to the cavity barriers, these were checked to see whether they had been fitted securely with the end of the fixing strap split and bent, and that joints were taped and secure. In relation to the cladding, the cladding rails were checked to see that they had been secured with the correct fixings at correct centres and levels.

35. Once the cladding panels were installed on each elevation, and before the mast climbers were disassembled, further visual checks were carried out. These were to see whether the cladding panels were fitted securely, correctly spaced and with the correct fixings and that there was no danger of anything falling off during or after installation. Falls of material from height post installation was a key concern. Harley checks were recorded in “Handover Sheets” which were sent on to Rydon (e.g. {HAR00010065}).

36. It should be noted that it is neither practical nor reasonable for a subcontractor to be constantly monitored in relation to how they carry out their work. Neither

was it practical at the time for every square meter of work to be checked. Indeed, once insulation boards were installed, checking the interface between the existing concrete walls and the back of all the cavity barriers would have been impossible without dismantling and damaging the finished work. Equally, once cladding panels had been fitted it was not physically possible to check underneath them again without dismantling and damaging the work. Having reflected on the systems that were in place for monitoring the work of third party installers, it is accepted that an improved check list system may have served to aid both those carrying out the installation work and those at Harley who monitored that work.

37. Through the evidence of Dr Lane it appears that the limited area of cladding which she had access to following the fire indicated poor workmanship by the installers, Osborne Berry. If Harley had seen such workmanship as captured in the photographs contained within her report at Section 8 {BLAS00000008} this would have been immediately raised with either Mr Osborne or Mr Berry and asked to be rectified.

38. In addition to checks by Osborne Berry and Harley, Rydon also checked the installation works being carried out as they progressed through its Package Manager and Clerk of Works. Ahead of visits by Building Control the Rydon Package Manager would be taken up the mast climbers to assess the work. No issue or concern was ever raised.

39. Inspections of the works were carried out by Building Control. Within the cladding industry, prior to the fire at Grenfell Tower, the practice was to rely on Building Control in relation to compliance with the Building Regulations and ADB.

40. Between the start of the refurbishment works at Grenfell Tower on 2nd June 2014 and completion on 7th July 2016 there appear to have been some 14 inspections by Building Control Officers. Seven of those visits involved inspection of the external façade works {BMER0000001_0143 to 0145}. On three of those visits Harley's Project Manager went up the mast climbers with

Building Control while they inspected the external façade. At no point was any concern expressed or issue raised by Building Control to Harley in relation to any aspect of the external façade, including the materials used, as well as the provision of cavity barriers. Indeed, not only was no adverse comment made by Building Control but the view was that the work was being completed to a high standard {TMO10047624} {RBK00044876}.

41. In relation to the provision of cavity barriers, whilst there was debate between Harley, Rydon and Studio E, all parties ultimately accepted and followed the guidance from Building Control {HAR00006596} which expressed "no adverse comments" with regards to compliance with the Building Regulations on the submitted drawings (1279 (6) 120 rev 00 {HAR00006598}, 121 rev 00 {HAR00006597}and C1059 – 325 rev C) {HAR00006599} (see further below at paragraphs 46 to 55).

42. It is clear from the expert evidence of Beryl Menzies that there were significant failings on the part of Building Control and by others in providing it information. Harley are only now aware (and were not aware at the time) that an in depth review of the cladding was not undertaken {BMER0000001_0009} by Building Control. Harley were not aware that Building Control had made no request for details or information regarding the external façade from Rydon, Exova, Studio E or the TMO. Harley had provided all its working drawings (including specification notes) and relevant information to Studio E and Rydon.

43. Ultimately, the shortcomings in the quality of installation which have been identified must fall to be considered in the context of the significance of their contribution to the spread of fire at Grenfell Tower. In this respect, it is notable that the weight of expert evidence appears to suggest that detailing and installation non-conformities at Grenfell Tower were far less significant than the nature of the rainscreen and insulation materials. For example, Professor Torero has indicated that he does not *"believe that all those non-conformities will have a very significant effect in altering the outcome"* (see line 140-1 of the transcript of Professor Torero's evidence on 20th November 2018). Similarly, Dr Lane has described the non-conformities in the installation of

cavity barriers as a *"minor defect"* (see line 148-1 of the transcript of Dr Lane's evidence on 22nd November 2018). In his expert report, Professor Torero has said:

> "*Details of the cladding will have an impact on the flame spread rates, although in the case of Grenfell Tower, upward flame spread rates are not uniquely fast. A comparison with other international events shows that upward flame spread for the Grenfell Tower is among the slowest. It is therefore possible to ascertain that detailing of the facade system (as opposed to its material composition) has only a minor impact on the evolution of this fire."*
> (see lines 91-95 of the expert report of Professor Torero {JTOS0000001_0004})

44. It is also notable that in full-scale BS 8414 tests commissioned by the Department for Communities and Local Government, materials of the kind used at Grenfell Tower failed to meet the criteria of BR 135. This failure occurred despite the fact that the design of the test specimen was reviewed by an expert panel and industry bodies to ensure that it was representative of the systems that are in common use, including the way that the materials were fixed {CLG10003133}. This, again, tends to suggest that it was primarily the materials used, rather than their method of fixing or other design details, that were the most significant factors in the spread of fire at Grenfell Tower.

Cavity Barriers

45. Cavity barriers were the subject of significant correspondence between Harley, Rydon and Studio E in March and April of 2015. On 3rd March 2015 Mr Lamb - Project Designer for the Grenfell Tower Project - sent an email to Simon Lawrence of Rydon, and Mr Crawford and Mr Sounes of Studio E, attaching a revised set of drawings. In the email, Mr Lamb stated, *"We assume a requirement of 90min integrity & 30min insulation is sufficient, if not please*

advise" {RYD00033586}. The drawings of the proposed cavity barrier locations were also sent to the manufacturer and supplier of the proposed cavity barriers - Siderise - in an email on 3rd March 2015 {SIL00000025}. This email also detailed that the proposed cavity barriers had 90 minutes integrity and 30 minutes insulation. Barnaby Carrick of Siderise responded, confirming that the proposals followed Siderise's recommendation {HAR00004013}.

46. On this occasion, Studio E sought the input of Building Control {HAR00003951}. Building Control Officer John Hoban responded to Studio E's enquiry by indicating that the "fire time" for the cavity barriers was 120 minutes {SEA00012963}. This led to a sequence of emails being exchanged between Harley, Studio E, Exova, Siderise and Building Control in an attempt to resolve this issue. Ultimately, it was agreed that the applicable cavity barrier requirement, according to paragraph 15 of Table A1 of ADB, was 30 minutes integrity and 15 minutes insulation, and that the cavity barriers originally proposed by Harley were sufficient to meet this requirement {SEA00013076}.

47. It is was obviously sensible for Harley to have sought confirmation from Studio E (via Rydon) that the proposed cavity barriers were suitable, as this was ultimately the responsibility of Studio E. It is to be noted that no issues were raised, either as to the suitability of the cavity barriers proposed or the absence of cavity barriers around the window openings, by Studio E, Siderise, Exova, Rydon or Building Control.

48. It has become clear, particularly with the disclosure of a number of expert reports, that the absence of cavity barriers around the window openings at Grenfell Tower is a source of major concern, and one that will be carefully scrutinised by the Inquiry (see, for example, paragraph 11.20.29 of the expert report of Dr Lane {BLAS0000011_0074}). Having carefully reviewed the expert reports and expert evidence so far, Harley accepts that the absence of cavity barriers around window openings may not have been compliant with the terms of ADB. However, no cavity barriers around the windows were specified by Studio E in the NBS. Nor did they feature in the cladding design drawings of Studio E {SEA00002163}. Nor was the absence of cavity barriers raised as

an issue or cause for concern by Exova or Building Control, despite each of those parties having been, at various times, provided with information from which it was clear that no cavity barriers were being installed around the window openings, and despite inspections having been carried out by the latter.

49. Mr Ray Bailey has commented that, whilst he was not involved in the detailing of cavity barriers at the time of the Grenfell Tower Project, he understands why the omission of cavity barriers at window openings may have occurred *"and [was] accepted by all parties"* (see paragraph 81 of the witness statement of Ray Bailey {HAR00010184_0021}). This is, in essence, because in order for fire to have passed from one window opening to another *via the rainscreen cavity*, it would still have needed to pass an appropriately fire-rated horizontal or vertical cavity barrier. Again, whilst acknowledging that this is a view that does not strictly reflect the guidance set out in ADB, it is perhaps mirrored in the comments of Professor Jose Torero, who, when asked about the absence of cavity barriers around windows, said:

> *"[...] but I think you have to keep in mind that we do not protect buildings from fires exiting the building [...] So in the context in which we're operating, absolutely it is a fundamental problem, but in the context of design, I think we have to take a step back and first think, effectively: what are we protecting? We've never considered the idea of protecting the exit path of a fire; we always consider the problem of the re-entry path of a fire"*
> (see line 145-3 of the transcript of Professor Torero's evidence on 20th November 2018)

50. Moreover, both Professor Luke Bisby and Dr Lane have commented that, whilst compliance with ADB does require the installation of cavity barriers around window openings, it is difficult to see how, in practice, that could be effectively achieved, given the design of the façade at Grenfell Tower (see line 106-11 of the transcript of Professor Bisby's evidence on 21st November 2018 and line 56-15 of the transcript of Dr Lane's evidence on 22nd November 2018).

51. As such, it is respectfully suggested that the seriousness of the omission of cavity barriers around windows must be understood in the context of a) its acceptance by a number of parties involved who were experienced in the construction industry; b) an emphasis within the industry of designing façades on the basis of preventing fire *spread* rather than fire egress; and c) the practical difficulties in achieving an effective cavity barrier around the window openings at Grenfell Tower.

52. It is equally apparent that the absence of a cavity barrier below the crown feature at Grenfell Tower is also a cause for concern (see, for example, paragraph 4.3.81 of Mr Hyett's report {PHYR0000004_0090}). Although some indication of a horizontal cavity barrier below the crown was given in Studio E's drawings {EXO00000806}, it has been observed that this information was inadequate and insufficiently thought through {PHYR0000004_0090}.

53. Again, it is noted by Mr Ray Bailey that, whilst he was not involved in the detailing of cavity barriers at Grenfell Tower, Diagram 33 of ADB is of questionable relevance to this issue (see paragraph 82 of the witness statement of Mr Ray Bailey {HAR00010184_0021}). Diagram 33 indicates that the top of a cavity should be sealed with a cavity barrier, but in circumstances where the opening of that cavity leads into a further enclosed roof space. That further space, as per Diagram 33, must itself be divided by cavity barriers precisely because it can provide a route for the unseen spread of fire. That was not the case at Grenfell Tower. The utility of Diagram 33, and the terms of ADB, have been commented on by others and, it is suggested, ought to be carefully considered during the course of Phase 2 of the Public Inquiry (see paragraph 382 of the expert report of Beryl Menzies {BMER0000001_0109}).

54. Furthermore, whilst it now appears that the ignition of materials in the architectural crown contributed to the lateral spread of fire around Grenfell Tower, it is important to bear in mind that nobody at Harley believed that those materials would behave in that manner in a fire, and, for all the reasons stated above, they had no reason to expect them to behave in that manner.

55. As such, whilst it is acknowledged that the absence of a cavity barrier below the crown may not have been in compliance with the terms of ADB, the seriousness of this shortcoming must be understood in the context of a) the lack of detail and information in the design drawings of Studio E; b) the lack of clarity in relation to this matter in ADB; and c) Harley's reasonable belief that the materials in the crown were safe.

The Manufacturers

56. Whilst Harley did not play a role in deciding what materials should be specified or used, in light of the information available in respect of the Reynobond ACM and the Celotex RS5000, no one at Harley was concerned about the use of these materials. This was not only because they had been specified within the NBS, but also because both Alcoa (now Arconic) and Celotex were globally trusted, respected manufacturers.

Alcoa (Arconic) & Reynobond

57. Reynobond ACM had been widely used in the UK from some 30 years. It was one of the two top ACM products, the other being Alucobond. Harley had used both products for years without either issue or concern being raised about them.

58. Reynobond ACM was manufactured by a company called Alcoa Architectural Products SAS ("Alcoa") which was a division of the Alcoa Group, which marketed itself as *"the world market leader in aluminium"* {ARC00000449_0002} and was considered throughout the cladding industry to be a well-established and reputable manufacturer of ACM and other cladding products. That Alcoa as a manufacturer, and ACM as a material, were trusted throughout the cladding industry is evident from the large number of high-rise buildings featuring such materials that have been identified in the UK following the fire at Grenfell Tower.

59. The marketing material produced by Alcoa prior to the fire at Grenfell Tower tended to suggest that Reynobond was suitable for a wide range of projects,

including high-rise residential blocks {ARC00000456}. Such marketing material spoke to the *"Complete versatility in exterior applications"* of Reynobond and Reynolux (another Alcoa product). It referred to Reynobond's characteristic flatness, making it suitable *"especially for large-scale implementations with special requirements"*, and indicated that it was suitable for a range of applications *"from the single-family house to residential, commercial and industrial buildings to large prestige projects"*. The front page of this document also prominently featured a photograph of what appears to be a high-rise residential block.

60. Other marketing material repeated the assertion contained in the BBA certificate that Reynobond, whether it contained a PE or FR core, was a Class 0 material for the purposes of fire certification in Great Britain {HAR00010313} {HAR00010319}. There was no caveat or exception to that assertion, as it appeared in this marketing material. Given the global reputation of Alcoa throughout the industry, it is submitted that that was an assertion which Harley and others were entitled to rely upon.

61. In addition to the general marketing materials that were produced by Alcoa and available to Harley at the time of the Project at Grenfell Tower, Harley also had direct communications with Alcoa, primarily via its UK Sales Manager, Deborah French. It is clear from these communications that Ms French knew that it was being proposed that Reynobond 55 PE would be used on a residential high-rise block. For instance, in an email exchange between Ms French and Mark Harris of Harley, in May 2014, Deborah French shared images of other projects where Reynobond had been used, including examples of its use on residential blocks in excess of 18 metres in height {HAR00010218} {HAR00010220} {HAR00010221} {HAR00010224}. Moreover, in email correspondence with Geoff Blades of CEP - who fabricated the Reynobond into cassettes for installation at Grenfell Tower – Ms French was sent a pdf attachment entitled *"Grenfell Tower spec.pdf"*, which was described by Mr Blades as *"rainscreen spec"* {ARC00000083}. This further suggests that Ms French had an awareness of the nature of the refurbishment of Grenfell Tower.

At no time was it suggested by Ms French, or anyone else at Alcoa, that Reynobond 55 PE might not be suitable for this project, or that its suitability needed to be considered further.

62. It has now emerged that Alcoa marketing material, apparently produced in December 2016 (after the completion of the Grenfell Tower refurbishment project but before the fire on 14th June 2017), suggests that Reynobond with a PE core is only suitable for use in buildings up to 10 metres in height, that Reynobond with an FR core is only suitable for use in buildings up to 30 metres in height, and that above 30 metres, Reynobond with an A2 rated core should be used {ARC00000465}. No such guidance was ever brought to the attention of Harley. In fact, it is not apparent that any similar guidance was ever produced by Alcoa prior to December 2016. Indeed, it does not appear from the marketing material available at the time of the Project at Grenfell Tower that Reynobond with an A2 core was even available at that time {ARC00000456}. Had Harley been aware of such guidance, it would not have used Reynobond with a PE core in the facade of Grenfell Tower.

63. Indeed, since the fire Harley has become aware through disclosure of CSTB classification reports that when it tested the Reynobond ACM in 2015 it obtained only a European Class C classification when in a riveted system {HAR00010196} and only achieved Class E (European class) when in a cassette system {HAR00010186}. This was something that Harley were never made aware of at any time by Alcoa. If the product had had a classification of Class E at the time of the Grenfell project, nobody, and certainly not Harley, would have considered that it was suitable for use.

Celotex RS5000

64. Like Alcoa, Celotex was a highly respected brand throughout the cladding industry and marketed itself as *"The UK's leading manufacturer of PIR insulation"* {CEL00000407} and *"the brand leading manufacturer of PIR boards"* {CEL00000410}.

65. What has been described as the product data sheet for RS5000, produced by Celotex in August 2014, features, in its header a description of this product as *"Premium Rainscreen Cladding Board (suitable for buildings above 18 metres in height)"* {CEL00000008}. Further details set out on the front page of that document state that *"Celotex RS5000 is our premium performance PIR solution for use in rainscreen cladding systems [...] and is the first PIR insulation board to meet the performance criteria in BR 135 for insulated rainscreen cladding systems and therefore is acceptable for use in buildings above 18 metres in height"*. It is only on the third page of this document that it is stated that the fire performance and classification report relates to the components in the wall build-up that were tested, and that any changes to the components *"will need to be considered by the building designer"* {CEL00000008_0003}. Notably, it is not suggested that changes to the components will render the fire performance and classification report invalid, or that such changes might make RS5000 unsuitable for use in buildings above 18 metres. Similar assurances about the suitability of RS5000 for use above 18 metres are made in other Celotex marketing material {CEL00001241} {CEL00000013} {CEL000001239}. Mr Hyett has expressed the view that the suggestion, in such marketing material, that RS5000 is acceptable for use in buildings above 18 metres in height, is an erroneous claim (see paragraph 4.2.19 of the Mr Hyett's report {PHYR0000004_0033}).

66. Moreover, the purported suitability of RS5000 was supported by Local Authority Building Control ("LABC"). The LABC Registered details drawing and document list states that RS5000 *"has successfully tested to BS 8414:2 2005, meets the criteria set out in BR 135 and therefore is acceptable for use in buildings with storeys above 18m in height (subject to the board being fixed to a non-combustible substrate)"* {CEL00000009}. Apart from the stipulation that RS5000 should be fixed to a non-combustible substrate (which clearly was the case at Grenfell Tower), that document contains no other caveat to RS5000's suitability for use above 18 metres. Indeed, the document explicitly states that *"Celotex RS5000 can be used with a variety of cladding systems (including masonry or rainscreen systems)"*.

67. In addition to the general marketing materials produced by Celotex, Harley was in direct contact with Celotex, largely via correspondence with Celotex's Major Projects and Specification Manager - Jonathan Roome. It was apparent at the time and this is now evident from evidence provided by Celotex's Sales Director - Paul Reid - that Mr Roome had technical competence and experience in cladding {CEL00011267_0003}. In the course of email correspondence with Mr Ben Bailey in February 2015 {CEL00000024}, Mr Roome was provided with drawings of the proposed wall build-up to be installed at Grenfell Tower, which included drawings specifying the use of Reynobond {CEL00000226} {CEL00000227} and a copy of the specification notes which referred to the use of aluminium composite panels {CEL00000170}. At no stage was it suggested by Mr Roome, or anyone else at Celotex, that the wall build-up being proposed at Grenfell Tower in any way called into question the suitability of the use of RS5000 above 18 metres.

Fire at Chalcot Estate

68. Another reason for Harley's confidence in the use of Reynobond ACM was because of its previous experience of a fire at the Chalcot Estate in Camden. In 2007, Harley were appointed as the external facades contractor for the Chalcot Estate. This project involved the design and installation of a complete external envelope on five 23 storey tower blocks. The main contractor for the project was Rydon. The architects were Hunt Thompson Architects. The installation was carried out by W. Kenny Limited. The client was the London Borough of Camden.

69. The architects had specified an ACM for the cladding, specifically a product called Alucobond. These panels were to be face-fixed. The insulation used was Rockwool (a mineral insulation). CEP Limited, the suppliers for the project, had suggested Etalbond, another ACM product. Etalbond was then what was proposed by Rydon and ultimately used for the cladding. During installation it became apparent that the Etalbond was defective. After some efforts to remedy the problem the panels had to be taken down and completely replaced by Reynobond ACM panels.

70. On the evening of 16th/17th January 2012 there was a fire in Flat 123 on the 17th floor of Taplow House, Chalcot Estate. Harley were informed that the fire was caused by a candle. Whilst the Reynobond ACM panels around the window were destroyed they did not ignite or contribute to the spread of fire as was the case at Grenfell Tower.

Concluding Remarks

71. Whilst the terrible tragedy which unfolded at Grenfell Tower was unique and unprecedented, its building envelope was not. Hundreds of buildings across the UK used the same materials. On 9th May 2019 the Secretary of State for Housing, Communities and Local Government informed the House of Commons that his department had identified a total of 433 high-rise residential and other buildings that featured unsafe ACM cladding. This terrible tragedy has shone a light upon the industry as a whole, and in particular on how products are tested and certified by manufacturers.

72. Whilst some changes have already been implemented there is no doubt that further changes need to be made. Those at Harley wish to assist the Inquiry to learn the relevant lessons from this tragedy and help it make recommendations which will be effective and long lasting to ensure the industry as a whole is safer.

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