

Grenfell Tower Inquiry

Paul Hyett, Architect

Supplemental Report

Part 4

For the avoidance of doubt, Part 4 of this Supplemental Report does not take into account any oral evidence provided to the Inquiry by any of the witnesses on behalf of Exova UK Limited or Rydon Maintenance Ltd. The Inquiry is yet to hear oral evidence from witnesses on behalf of Artelia Projects UK Ltd and/or Harley Facades Ltd.

3 Exova UK Limited – Response to Opening Statement

3.1 Introduction

- 3.1.1 In this section I respond to Exova (UK) Limited's Opening Statement. I address the items contained therein which I consider warrant further commentary with respect to the position as set out in my report.
- 3.1.2 Having read Exova's Opening Statement, I have found it necessary in some instances to moderate, and in others to qualify and/or further explain, some of my criticisms of Exova. I deal with this by way of further commentary on each of the issues listed under (a) to (o) below.
- 3.1.3 Thereafter, I make some additional comments on other parts of Exova's Opening Statement in instances where I think my opinion may be useful to the Inquiry.
- 3.1.4 In none of those instances should any moderation of any criticism that I have made of Exova be taken as reason to modify or otherwise alter my criticisms of others against whom I have commented elsewhere in my report or Supplemental Report.
- 3.1.5 I have set out below a summary list of the key occasions where I am critical of Exova and/or its staff within my report:
- a) Executive Summary paragraph 15 wherein I opine that Exova should '*as a specialist fire consultant, have drawn Studio E's attention to the need for very careful consideration in terms of the specification of a composite cladding system with a polyethylene core, particularly in a high-rise residential building...*'
 - b) Section 4 paragraph 4.2.21 wherein I make the qualified comment that '*if Exova saw that Studio E Stage D Report, this would constitute a serious error on their part as the Studio E Stage D Report confirmed the use of Celotex FR5000 which, because Exova are specialist Fire Engineering Consultants, should have been well known to them as being non-compliant with the guidance given under ADB2 Paragraph 12.7.*'
 - c) Section 4 paragraph 4.2.22 wherein I state that '*I do not believe that Exova ever did follow up on this matter (compliance with the B4 requirement will be confirmed by analysis in a future issue of this report)... Exova should be criticised for not subsequently ensuring that such analysis was ultimately carried out.*'

- d) Section 4 paragraph 4.2.28 wherein I state, *'Given that Exova had sight of the Celotex FR5000 specification when they were sent the Studio E Stage C report in October 2012, I am also extremely critical of their performance as a specialist fire consultant'*.
- e) Section 4 paragraph 4.3.20 wherein I criticise Exova for issuing Revision (Issue) 03 of its Outline Fire Strategy Report on 7 November 2013 (as noted in paragraph 4.3.19) which again stated that the *'proposed changes will have no adverse effect on the building in relation to external fire spread'* when they knew, or should have known, that Celotex FR5000 had been specified as the insulation within the cavity formed by the rainscreen cladding.
- f) Section 4 paragraph 4.3.79 wherein I criticise Mr Ashton of Exova for a lack of precision in his terminology when advising on the performance requirements of a particular cavity barrier.
- g) Section 4 paragraph 4.4.35 wherein I criticise Mr Ashton for providing advice (as quoted at paragraph 4.3.34) without adequately acquainting himself with the proposed work and its context, or, in the alternative, if he was appropriately informed, for giving advice in circumstances where he should have recognised and reported a fundamental error (the incorporation of an insulation material that did not meet the requirements for 'limited combustibility' as required under ADB2 paragraph 12.7 into the over cladding proposals for a building over 18m high).
- h) Section 4 paragraph 4.4.41 wherein I criticise Exova for its apparent ongoing confidence in the use of PIR insulation within the cladding system which in my opinion represented a continuing failure *'to understand both the requirements of the Building Regulations and the guidance given within ADB2 with respect to insulation in external walls'*.
- i) Section 4 paragraph 4.4.111 at sub-paragraph (b) wherein I criticise Mr Ashton for advising that he *'has never seen Studio E drawings in relation to the external walls'* despite assurances *'given in Exova's Outline Fire Strategy Reports of August and November 2013'* confirming Exova's opinion that *'the proposed changes will have no adverse effect on the building in relation to external fire spread'* and thereafter at sub-paragraph (d) wherein I state that Mr Ashton *'appears to be condoning an outright breach of ADB2 guidance under paragraph 12.7'*.
- j) Section 4 paragraph 4.4.113 at sub-paragraph (c) wherein I criticise Mr Ashton for giving advice in circumstances where he should have recognised and reported a fundamental error of specification (the incorporation of an insulation material that did not meet the requirements for 'limited combustibility' as required under ADB2 paragraph 12.7 into the over cladding proposals for a building over 18m high) and at sub-paragraph (d) where I criticise Mr Ashton for implying (wrongly) that continuous horizontal cavity barriers may not have been required within those parts of the cavities around the column casings that aligned with compartment floors.

- k) Section 4 paragraph 4.4.121 wherein I criticise Mr Ashton for giving advice in circumstances where he appears not to have adequately researched and/or understood the specification and design of the over cladding to the external walls.
- l) Section 4 paragraph 4.4.124 wherein I criticise Mr Pearson of Exova for his '*apparent fundamental lack of understanding of the principles involved in ADB2 guidance with respect to inhibiting the spread of fire into the cavity behind the rainscreen cladding and thereafter onwards through it*'.
- m) Section 4 paragraph 4.4.150 wherein I criticise Exova for not being sufficiently aware of the dangers of ACP and/or not having warned sufficiently of the importance of ensuring that the product was used '*in strict accordance with its certification and with the requirements of ADB2.*'
- n) Section 5 paragraph 5.2.17 wherein I state '*I am very critical of Exova as a specialist fire consultant... for expressing the view as set out at paragraph 3.1.4 of Revision 1 of its Fire Strategy Document (that the proposed changes will have no adverse effect on the building in relation to external fire spread) without first establishing what the external wall construction comprised in terms of materials*' and thereafter for not amending that view later, including at the point of issue of Revision 03 of its Fire Strategy Document at which time Exova '*knew, or ought to have known, that the principal insulation material comprising the external wall was a PIR product*'.
- o) Section 5 paragraph 5.2.18 at sub-paragraph (g) wherein I state that '*the parties involved in developing the design through to the completion of the Studio E Stage D Report (notably: Studio E, Max Fordham and particularly surprisingly Exova) were ignorant of the problems inherent in the proposal to incorporate PIR insulation within the new cavity that would be created to all four facades by the rainscreen cladding*'.

3.1.6 Prior to dealing with those issues, I will first address a fundamental point which Exova makes at paragraphs 5.1, 6.1(A)2 and 6.1(A)3 of its Opening Statement.

3.1.6.1 At paragraph 5.1 Exova states:

'Exova's work preceded the critical decisions in relation to the cladding system; so too did the preparation of contractual documents which ought to have precluded those decisions; responsibility for those decisions was accepted by Rydon. Reliance may have been placed on others, in making those decisions, but not on Exova: it was not asked for advice in support of those decisions nor, having been cut out of the relevant loop, was it in a position to give such advice or even to warn.'

- 3.1.6.2 At paragraph 6.1(A)(2) Exova further states that consideration should be given to:

'the fact that Exova was substantially excluded from the project after the third issue of its report on the refurbishment, in November 2013 – that position being cemented, from early 2014 onwards, by the fundamental shift to the D&B model and the D&B contractor's conscious decision not to retain a fire consultant.'

- 3.1.6.3 At paragraph 6.1(A)(3) Exova then submits that, when assessing Exova's performance in relation to the over-cladding, appropriate account should be taken of:

'the fact that every critical decision in relation to the cladding system was taken after that date (the appointment of Rydon in March 2014) and without Exova's involvement' (my parenthesis).

- 3.1.6.4 It will be a matter of evidence as to exactly what Exova means by the term '*cladding system*'.

- 3.1.6.5 However, if, as I infer from its statement, Exova is suggesting that the '*cladding system*' includes the entirety of the over-cladding work that was carried out under the 2012-16 Works (which essentially comprised the thermal insulation, rainscreen cladding, cavity barrier arrangements, windows together with their infill panels and the internal window head, jamb and sill interfaces), it is misleading for Exova to claim, as it does at paragraph 5.1, that its '*work preceded the critical decisions in relation to the cladding system*', and as it does at paragraph 6.1(A)(3) '*that every critical decision in relation to the cladding system was taken after that date*'.

- 3.1.6.6 On the contrary, two fundamental decisions relating to elements of the over-cladding work (one relating to the choice of a PIR product for the thermal insulation and the other relating to the extent and disposition of cavity barriers) were made prior to November 2013.

- 3.1.6.7 As stated above, the meaning of the term '*cladding system*' will ultimately be a matter for evidence, but I offer the following definition which I hope will help the Inquiry in its deliberations. It is taken from the web-site of Architectural Façade Solutions International (AFS International <https://architectural-façade-solutions.com>):

*'Cladding systems: To maintain the structure, frame and exterior walls of a building, certain panel **systems** are applied. The panels are installed over other materials used in construction'* (their emboldening).

- 3.1.6.8 This definition accords with my own understanding: a cladding system comprises a set of components that make up a discrete element of construction. In this case, the supporting frame to which the cladding panels are fixed, the brackets/bolts etc. by which the panels are affixed to that frame, and the cleats/bolts/brackets etc. by which the supporting frame (known typically as 'secondary structure') is affixed to the building (known typically as the 'primary structure').
- 3.1.6.9 In my opinion the AFS International reference to fixing the cladding system '*over other materials used in construction*' clearly anticipates myriad other materials and components including the insulation and the cavity barriers, all of which are part of the adjoining construction that comprises the external wall, but are not in themselves a part of the cladding system itself.
- 3.1.6.10 It is notable that, under its procurement strategy for the 2012-16 Works, Rydon clearly preferred to let the over-cladding work as a single sub-contract 'package'; that is, it intended that one sub-contractor would procure and supply all the labour, components and materials as required to complete the entirety of the over-cladding work.
- 3.1.6.11 Harley, Rydon's sub-contractor, appears to have complied with this preference with the sole exception of the internal linings and packing/thermal insulation to the head, jambs and sills of the windows which Harley clearly marked as 'by others' on its drawings (see Figures 4.80, 4.81 and 4.82 of my report).
- 3.1.6.12 However, and despite those procurement arrangements, it does not follow that Harley were responsible for the design of the entire over-cladding work, or indeed that the entire over-cladding constituted a 'cladding system'.
- 3.1.6.13 These points are essential to understanding Exova's responsibilities with respect to the design and specification of the work as constructed.
- 3.1.6.14 In my view the 'over-cladding work' in its entirety constituted a 'bespoke design' for which Studio E was responsible. That is, it was designed specifically for Grenfell Tower and comprised many materials and components including the insulation, the cavity barriers, and the cladding. Within that 'bespoke design' the rainscreen cladding element together with its paraphernalia of supporting and fixing components did indeed comprise a 'system'; that is, an array of elements that together formed a part of the whole. It was, however, in this respect a discrete part of the whole.
- 3.1.6.15 Some of that 'bespoke design' (as prepared by Studio E) required significant further design and specification development by Harley.

- 3.1.6.16 In this respect the most significant element that required further design and specification work was the rainscreen cladding system comprising the ACP cladding cassette panels, the supporting frame to which the cladding panels were fixed, the brackets/bolts etc. by which the panels were affixed to the frame, and the cleats/bolts/brackets etc. by which the supporting frame was affixed to the building.
- 3.1.6.17 Other parts of that bespoke design, such as the PIR thermal insulation that was to be installed within the cavity created by the rainscreen cladding, and the cavity barrier provisions, required very little further design or specification development. They could, in most respects, simply be transposed from the Studio E drawings onto Harley's drawings.
- 3.1.6.18 This is important in relation to any assessment of Exova's work. Studio E did have responsibility for the general design arrangement and specification of the principal elements that made up the over-cladding, including the rainscreen cladding system (that is the dimensional coordination of the principal components in order to ensure that they fitted together and ensuring that they met the guidance as contained within the Approved Documents). Harley carried responsibility for the detailed design and specification of the rainscreen cladding system (that is its robustness, the sizing and connection detailing of brackets, cleats and supporting rails, and weathertightness of seals etc. where appropriate).
- 3.1.6.19 It is against this background that I consider Exova's assertion at paragraph 6.1(A)(3) of its Opening Statement that *'every critical decision in relation to the cladding system was taken after that date'* (that is the appointment of Rydon in March 2014) to be incorrect.
- 3.1.6.20 Furthermore, it is wrong, if it was so intended, for Exova to suggest that the entirety of the over-cladding provision was all part of the 'cladding system'. It was not.
- 3.1.6.21 I deal in greater detail with these issues later in this section of this Supplemental Report, but suffice it to say here that of the five over-cladding design elements that I review at each Snap-Shot Stage within Section 4 of my report, that is: i) Envelope Insulation ii) Rainscreen Cladding iii) Cavity Barriers iv) Window Infill Panels and v) Window Head, Jamb, Sill Interface, the *'critical decisions'* (to adopt Exova's phraseology) relating to the type of envelope insulation (choice of PIR as a material), and the application of the cavity barriers (extent and positioning) were both taken before Rydon's appointment and during the time that Studio E were engaged by KCTMO.
- 3.1.6.22 These *'critical decisions'* relating respectively to the *'specification'* of the envelope insulation and the *'extent and positioning'* of the cavity barriers remained pretty well consistent within all subsequent information, as produced by both Studio E and Harley, through to completion.

- 3.1.6.23 Accordingly, and contrary to Exova's claim at paragraph 6.1(A)3 of its Opening Statement, errors in the information relating to those two elements initially occurred at a time during the project's development that was pre-novation and during which Studio E was, and Exova certainly should have been, fully involved in the design development under their respective appointments to KCTMO.
- 3.1.6.24 In that respect it is my opinion, contrary to the suggestion at 6.1(A)3 of Exova's Opening Statement, that the critical decisions relating at least to the specification for/choice of a PIR material for the envelope insulation, and the extent and positioning of the cavity barriers, were not only made at a time during which Exova were (or at least should have been under the terms of their appointment to KCTMO) 'fully' involved, but they were also made at a time when Exova had an express duty to comment on such work under its 9 May 2012 fee agreement against which it was appointed {ART00000026}.

3.2 Further commentary with respect to my criticisms of Exova

- 3.2.1 **Executive Summary paragraph 15** wherein I opine that Exova should '*have drawn Studio E's attention to the need for very careful consideration in terms of the specification of a composite cladding system with a polyethylene core, particularly into a high-rise residential building...*'

- 3.2.1.1 Exova's 9 May 2012 Fee Proposal states under RIBA Stage F {ART00000026/3}:

'...we would assist the design team and the appointed contractor for the development in addressing the fire safety issues during the tender review phase. This work is likely to result in further adjustments to the fire safety strategies approved during RIBA Stages D/E'.

- 3.2.1.2 Whilst ACP had been incorporated as one of a series of alternative rainscreen cladding options within the Employer's Requirements against which alternative tenders were to be provided (and in particular in the NBS Specification), when serious consideration was ultimately given to the switch to ACP rainscreen cladding following the appointment of Rydon in March 2014, Exova were not a member of the Rydon design team.
- 3.2.1.3 Rydon decided not to appoint Exova (or any other specialist fire consultant) as part of the design team. In such circumstances I am not critical of Exova for failing to give routine ongoing advice to Rydon post-novation, or advice to Studio E, as Studio E's appointment to KCTMO had ceased and it was thereafter employed by Rydon.
- 3.2.1.4 In my opinion it would have been impracticable for Exova to provide such ongoing advice in those directions: with no authority and no relationship, Exova was not in a position to simply 'muscle in' and express its views.

- 3.2.1.5 I am of the opinion however that following its effective demise in terms of any formal involvement with the Rydon team, Exova should have confirmed in writing to both Studio E and KCTMO that not only had the work that it had envisaged 'seeing through' under its 9 May fee proposal not been completed, but furthermore and most significantly, that important 'loose ends' remained outstanding (for example *'compliance with the B4 requirement will be confirmed by analysis in a future issue of this report'* as referred to under paragraphs 4.2.20 and 4.2.22 of my report). I have seen no evidence that Exova ever issued such advice.
- 3.2.1.6 Furthermore, whilst Exova were not 'taken on' by Rydon, as I understand it their appointment to KCTMO was never terminated. It is no doubt against this continuing appointment arrangement that Exova deemed it appropriate to provide ongoing commentary and advice when requested by e.g. Studio E, Rydon and Harley as the project proceeded.
- 3.2.1.7 It is also my opinion that, notwithstanding the ongoing responsibility that Exova appear to have had in favour of KCTMO in terms of seeing its work under the 9 May 2012 appointment through to completion, with respect to any specific advice that Exova was subsequently asked to give post-novation, Exova should have ensured that its instructions in that respect were clear and that any information (relevant current drawings / specification etc. as required to properly inform that advice) was in its possession. I deal with this issue in more detail when dealing with my other criticisms of Exova below.
- 3.2.1.8 As to whether Exova should have drawn Studio E's attention to the need for very careful consideration of the specification of a composite ACP cladding system with a polyethylene core, particularly into a high-rise residential building, I make the following points:
- i) Whilst I have stated my opinion at paragraph 4.4.89 of my report *'that the guidance contained within ADB2 (at that time) endorsed, in principle, the use of the Reynobond Aluminium Composite Panels on a project such as Grenfell Tower (and that) I believe that an architect should be able to rely on the Approved Document guidance as being adequate to meet the requirements of the Building Regulations'*, I question whether a specialist fire consultant should have been better informed in this respect.
 - ii) This is a matter upon which other experts will be better placed to comment, but I raise this question because Exova as specialist fire consultants would have routinely had better access than an architect to reports on materials in relation to other cladding system fires that had occurred and which should have informed prevailing thinking amongst fire consultants at the time of the 2012-16 Works.

- iii) Indeed, as a matter of professional responsibility, I believe that Exova should have followed up on any such reports as a routine part of its work, and in order to inform advice that it from time to time would give on projects. However, this again is a matter that other experts who are more appropriately qualified than me should be asked to comment.
- iv) It will be a matter of evidence as to whether Exova were passed a copy of the Employer's Requirements for the 2012-16 Works, or indeed whether it received any other indication that ACP had been incorporated into the documentation as an alternative option against which a tender price was to be provided. If it was provided with such information during the time that Studio E was retained by KCTMO (that is pre-novation) then, in my opinion, Exova should, as a specialist fire consultant, have at least alerted Studio E to the importance of ensuring that ACP with a fire-retardant core should be specified as the option against which the tender price should be submitted.
- v) In this context I note that within its fee proposal of 9 May 2012 {ART00000026/3}, Exova stated the following:

'RIBA Stage F

During this stage of work, we would assist the design team and the appointed contractor for the development in addressing the fire safety issues that appeared during the tender review phase. This work is likely to result in further adjustments to the fire safety strategies approved during RIBA Stages D/E.

This work would ensure that the fire safety strategy for the development followed the requirements of The Building Regulations 2010. Any agreed revisions to the fire safety strategy would be fully documented and submitted to the building control authority in order to achieve regulatory approval.

The scope for this stage of the project would include:

- *Attend relevant fire safety meetings with the design team and appointed contractor to clarify fire safety strategies used throughout the development.*
- *Troubleshooting strategic fire safety issues that are identified by the contractors.*
- *Discuss the contractors issues and the proposed solutions, as and when appropriate, with the regulatory approvers...*
- *Provide an updated version of the fire safety strategy documentation to reflect any agreed changes to the strategy following any related design development and consultation with the approvals body.*

Completion of this stage of services will occur once all of the above-mentioned goals are accomplished'.

- vi) I make the point within the Introduction to Section 4 of my report, and Part 1 of this Supplemental Report, that only the early part of RIBA Work Stage F1 was due to be carried out by Studio E under its appointment to KCTMO. In the event, F1 appears not to have been completed by Studio E under the KCTMO appointment so those parts that remained outstanding should therefore have been picked up and completed by Studio E following its novation to Rydon.
- vii) Against the above described duties as set out in Exova's fee proposal, and notwithstanding my earlier point about the impracticability of Exova 'muscling in' to team meetings that took place following Rydon's appointment, it does seem to me that in the absence of any notification of cancellation of its engagement to KCTMO, or notification of any variation of the ongoing terms of its appointment, that Exova had an ongoing duty towards KCTMO to see its work in this respect through to completion.
- viii) It also seems clear to me that such completion was defined as being the point at which *'all of the above-mentioned goals are accomplished'*.

3.2.1.9 Against that rather complicated background it is my opinion that:

- i) Exova had an ongoing duty under its appointment to KCTMO to carry out to completion its duties under its 9 May 2012 fee proposal as described above.
- ii) That in this respect it should therefore have taken a pro-active role in requesting sight of the relevant documentation as pertaining to the developing and developed over-cladding arrangements as produced by both Studio E and Harley under the equivalent of RIBA Work Stage F.
- iii) That Exova should have sought to: *'Discuss the contractor's issues and the proposed solutions, as and when appropriate, with the regulatory approvers'*.
- iv) That Exova should have provided *'an updated version of the fire safety strategy documentation to reflect any agreed changes to the strategy following any related design development and consultation with the approvals body.'*

3.2.1.10 In my opinion an updated Fire Strategy Document should have contained a thorough analysis of the proposed over-cladding arrangement in the form in which it was to be constructed.

- 3.2.1.11 As such, I suggest that it should have contained a commentary on the use of ACP as a rainscreen cladding system. In my opinion, such a commentary should at least have drawn attention to the fact that because the building was over 18m high and of residential use a fire-retardant polyethylene core should be specified. I again, however, qualify this comment by stating that other experts will be better qualified than me to comment on this matter.
- 3.2.1.12 The extent to which, during the post novation stage of the project, Exova did have knowledge of the rainscreen cladding specification will be a matter of evidence. The extent to which, in the context of any questions being asked of it in relation to the external wall over-cladding arrangements, Exova should have inquired as to that construction, and/or in the knowledge that such construction contained ACP, should have warned of possible problems in terms with compliance with the requirements of Building Regulation paragraph B4(1), will be a matter upon which an expert more appropriately qualified than me should comment.
- 3.2.2 **Section 4 paragraph 4.2.21** wherein I make the qualified comment that *'if Exova saw that Studio E Stage D Report this would constitute a serious error on their part as the Studio E Stage D Report confirmed the use of Celotex FR5000 which , because Exova are specialist Fire Engineering Consultants, should have been well known to them as being non-compliant with the guidance given under ADB2 Paragraph 12.7'.*
- 3.2.2.1 The proposal to adopt a PIR material for the insulation, as ultimately incorporated within the cavity created by the rainscreen cladding, was (as stated earlier herein) taken very early in the life of the project.
- 3.2.2.2 I note that at paragraph 5.4 of its Opening Statement Exova states that it was appointed by KCTMO under two separate instructions, *'one in relation to the existing building's fire strategy, and one for fire strategy in relation to the proposed refurbishment.'*
- 3.2.2.3 I further note that at paragraph 5.6 Exova summarises its instructions in relation to the proposed refurbishment. It makes clear at paragraph 5.6(A) that it was to produce a *'preliminary fire strategy report during RIBA Stage C'*. At paragraph 5.6(B) it makes clear that this work was to *'be further developed during RIBA Stage D/E, with a fire strategy report considering... determination of any external fire spread issues that (there) may be and the impact this may have on the architectural design'*. At paragraph 5.6(C) it makes clear that *'At RIBA Stage F' Exova was to 'assist the design team and the appointed contractor... in addressing the fire safety issues that appeared during the tender review phase... and provide an updated revision of the fire safety strategy documentation to reflect any agreed changes... following any related design development and consultation with the approvals body.'*

3.2.2.4 Taking these three stages in turn, it is clear that Exova produced a preliminary fire strategy report during Studio E's RIBA Stage C under its appointment to KCTMO.

3.2.2.5 In this respect I quote from paragraph 4.2.21 of my report as follows:

'I am however aware that Exova were sent a link to the Studio E Stage C report {SEA00006429} on 31 October 2012 {EXO00001575} and that this Stage C report contained details about the specification of FR5000. Those details were contained on page 12 of the Max Fordham Stage C report, which was included within the Studio E Stage C report from page 70. By virtue of Exova having received the Studio E Stage C report, it is therefore clear that Exova had indeed received confirmation of the proposed use of FR5000 from 31 October 2012 ... On this basis I am of the opinion that Exova should have realised that the design team were intending to incorporate an insulation material within the external wall that was not compliant with the guidance in 12.7 of ADB, and in such circumstances, should have advised that the product was non-compliant and should not be specified.'

3.2.2.6 Against that commentary it will be for other experts more suitably qualified than me to comment on what a specialist fire consultant should incorporate into a fire strategy report but, as an architect I would, under such terms of appointment, have expected Exova to have drawn my attention to circumstances where any materials that were being proposed for incorporation into the over-cladding, and any drawings that showed the arrangements of those materials, did not comply with the guidance in ADB2 and/or the Building Regulations.

3.2.2.7 As stated above, page 12 of Max Fordham's Stage C report was incorporated into Studio E's Stage C report from page 70. Examination of page 12 of Max Fordham's report reveals that reference is made to the incorporation of Celotex FR5000 as the insulation for the spandrel walls at Table 4-2 and for the columns at Table 4-3. This is further clearly denoted on the section shown at Figure 4-2.

3.2.2.8 In this respect it will be a matter for evidence as to what information, as pertaining to the materials and design arrangements relating to the proposed over-cladding, Exova actually studied. What is evident is that the terms of its appointment (as confirmed by Exova in its Opening Statement and as quoted above) made clear that Exova was under contractual obligation to carry out such study and to report accordingly. It should therefore, in my opinion, have properly studied and reported on the information that it received, or alternatively, should have requested such information as it felt necessary to study in order to provide the advice that it was contracted to provide under its work in relation to RIBA Work Stage C. Notable in this context is the fact that Mr Ashton was sent the Celotex RS5000 datasheet on 18 September 2014 {SEA00011724}.

- 3.2.2.9 Under paragraph 5.6(B) of its Opening Statement Exova confirms that its work was to *'be further developed during RIBA Stage D/E with a fire strategy report considering... determination of any external fire spread issues that (there) may be and the impact this may have on the architectural design'*. It is again clear that a very significant part of RIBA Stage D/E was carried out whilst Studio E was appointed to KCTMO and Exova was (or at least should have been) fully engaged with Studio E in developing the project.
- 3.2.2.10 As I state at paragraph 4.2.20 of my report, Revision (Issue) 1 of Exova's Outline Fire Safety Strategy report dated 31/10/12 was incorporated as Appendix D of the Studio E Stage D Report dated August 2013 {SEA00008054/78}. Section 5 (Outline Specification) {SEA00008054/29} confirmed the proposed incorporation of Celotex FR5000 as part of the over-cladding works. In this context it will of course again be a matter of evidence whether Exova saw that report and, if so, whether they read that specification note.
- 3.2.2.11 Throughout this stage of the work, PIR insulation material (as ultimately incorporated into the construction) remained as the proposed insulating material within the cavity created by the rainscreen cladding. Assuming that Exova properly appraised the design and specification material relating to the project as would then have been available to it, this would have been readily apparent to Exova. The point made above with respect to Exova's failure under RIBA Work Stage C of its appointment (as described at paragraph 5.6 (A) of its Opening Statement) applies even more so to this stage (that is RIBA Work Stage D/E) of Exova's appointment, Exova having known (or ought to have known) since 31 October 2012 of the proposal to incorporate PIR insulation material within the cavity created by the rainscreen cladding.
- 3.2.2.12 In the case of Exova's work under both RIBA Work Stages C and D/E of Exova's appointment to KCTMO, it is my opinion that a specialist fire consultant should have realised that a PIR insulation material such as Celotex FR5000 was not compliant with paragraph 12.7 of ADB2. Exova should have alerted Studio E, during its appointment to KCTMO and before issue of the Employer's Requirements tender documentation, to the fact that an alternative insulation material that was compliant with the guidelines of ADB2 should be specified, or an alternative route to ADB2 should be adopted in terms of securing and demonstrating compliance with the Building Regulations.
- 3.2.2.13 In the case of Exova's work under RIBA Work Stage F, as Exova states at paragraph 5.6(C) of its Opening Statement (and as quoted from its 9 May 2012 fee proposal), it was clear that *'At RIBA Stage F' Exova was to 'assist the design team and the appointed contractor for the development in addressing the fire safety issues that appeared during the tender review phase... Provide an updated revision of the fire safety strategy documentation to reflect any agreed changes to the strategy following any related design development and consultation with the approvals body'*.

3.2.2.14 However, the situation was somewhat complicated by the fact that:

- i) Studio E, despite its obligations so to do under the terms of its own appointment had not completed its RIBA Work Stage F1 under its appointment to KCTMO.
- ii) That part of Studio E's RIBA Work Stage F1 that remained incomplete, together with RIBA Work Stage F2 (referred to simply as 'RIBA Stage F' in the Exova fee proposal) was in the event carried out variously by Studio E and Harley (albeit mostly by Harley) under their separate appointments to Rydon.
- iii) Exova was not retained by Rydon.

3.2.2.15 I have dealt with this issue at some length above under my commentary with respect to my criticisms of Exova in relation to Executive Summary paragraph 15 of my report. I therefore merely repeat that, notwithstanding the impracticability of Exova 'muscling in' to team meetings that took place following Rydon's appointment, it does seem to me that in the absence of any notification of cancellation of its engagement to KCTMO, or notification of any variation of the ongoing terms of its appointment, that Exova had an ongoing duty towards KCTMO to see its work in this respect through to completion and in that context it seems clear to me that such completion was clearly defined as being the point at which *'all of the above-mentioned goals are accomplished'* (page 3 line 28 of Exova 9 May 2012 appointment document {ART00000026}).

3.2.2.16 In this respect Exova should therefore have taken a pro-active role in requesting sight of the relevant documentation as pertaining to the developing and developed over-cladding arrangements as produced by both Studio E and Harley under the equivalent of RIBA Work Stage F.

3.2.2.17 In that process Exova should have *'...(provided) an updated version of the fire safety strategy documentation to reflect any agreed changes to the strategy following any related design development and consultation with the approvals body'*.

3.2.2.18 That updated Fire Strategy Document should have contained a thorough analysis of the proposed over-cladding arrangement in the form in which it was to be constructed. As such, it should, in my opinion, also have identified the problems relating to the use of thermal insulation materials within the external wall cavity which did not comply with the guidance of ADB2.

3.2.3 **Section 4 paragraph 4.2.22** wherein I state that *'I do not believe that Exova ever did follow up on this matter* (compliance with the B4 requirement will be confirmed by analysis in a future issue of this report)*... Exova should be criticised for not subsequently ensuring that such analysis was ultimately carried out'*.

3.2.3.1 I stand by this comment. See my comments above.

- 3.2.4 **Section 4 paragraph 4.2.28** wherein I state that *'Given that Exova had sight of the Celotex FR5000 specification when they were sent the Studio E Stage C report in October 2012, I am also extremely critical of their performance as a specialist fire consultant'*.
- 3.2.4.1 I stand by this comment. See my comments above.
- 3.2.5 **Section 4 paragraph 4.3.79** wherein I criticise Mr Ashton of Exova for a lack of precision in his terminology when advising on the performance requirements of a particular cavity barrier.
- 3.2.5.1 I stand by this comment.
- 3.2.6 **Section 4 paragraph 4.4.35** wherein I criticise Mr Ashton for providing advice without adequately acquainting himself with the proposed work and its context, or, in the alternative, if he was appropriately informed, for giving advice in circumstances where he should have recognised and reported a fundamental error (the incorporation of an insulation material that did not meet the requirements for 'limited combustibility' as required under ADB2 paragraph 12.7 into the over cladding proposals for a building over 18m high).
- 3.2.6.1 I stand by this comment and draw particular attention to paragraph 4.4.34 of my report where I quote Mr Ashton as giving advice pertaining to cavity barriers qualified as follows, *'If the insulation in the cavities behind the rainscreen cladding is combustible....'*
- 3.2.6.2 In my opinion Mr Ashton should not have given any such advice in the context of a residential building over 18m high in circumstances where ADB2 was the selected route to compliance.
- 3.2.6.3 In my opinion Mr Ashton should have advised immediately that such insulation was required to be of 'limited combustibility' in accordance with ADB2 paragraph 12.7.
- 3.2.7 **Section 4 paragraph 4.4.41** wherein I criticise Exova for an apparent ongoing confidence in the use of PIR insulation within the cladding system which in my opinion represented an ongoing major failure *'to understand both the requirements of the Building Regulations and the guidance given within ADB2 with respect to insulation in external walls'*.
- 3.2.7.1 I stand by this comment on the basis of my preceding commentary within this part of my Supplemental Report.
- 3.2.8 **Section 4 paragraph 4.4.111** wherein I criticise Mr Ashton for appearing *'to be condoning an outright breach of ADB2 guidance under paragraph 12.7'*.
- 3.2.8.1 I stand by this comment on the basis of my preceding commentary within this part of my Supplemental Report.

3.2.9 **Section 4 paragraph 4.4.113** wherein I criticise Mr Ashton for giving advice (at c) in circumstances where he should have recognised and reported a fundamental error of specification (the incorporation of an insulation material that did not meet the requirements for 'limited combustibility' as required under ADB2 paragraph 12.7 into the over cladding proposals for a building over 18m high) and asks a question (at d) where I criticise Mr Ashton for implying (wrongly) that continuous horizontal cavity barriers may not have been required within those parts of the cavities that aligned with compartment floors.

3.2.9.1 I stand by this comment on the basis of my preceding commentary within this part of my Supplemental Report.

3.2.10 **Section 4 paragraph 4.4.121** wherein I criticise Mr Ashton for giving advice in circumstances where he appears not to have adequately researched and/or understood the specification and design of the over cladding to the external walls.

3.2.10.1 I stand by this comment on the basis of my preceding commentary within this part of my Supplemental Report.

3.2.11 **Section 4 paragraph 4.4.150** wherein I criticise Exova for not being sufficiently aware of the dangers of ACP and/or not having warned sufficiently of the importance of ensuring that the product was used *'in strict accordance with its certification and with the requirements of ADB2.'*

3.2.11.1 I refer the Reader to the commentary above under Executive Summary paragraph 15. I also state again that my commentary is based on the expectation I have as an architect in terms of the advice and work that should be expected of a specialist fire consultant. An expert fire consultant will be better qualified than me to comment on what is expected of its members by that profession.

3.2.12 **Section 5 paragraph 5.2.17** wherein I state *'I am very critical of Exova as a specialist fire consultant... for expressing the view as set out at paragraph 3.1.4 of Revision 1 of its Fire Strategy Document (that the proposed changes will have no adverse effect on the building in relation to external fire spread) without first establishing what the external wall comprised (of) in terms of materials'.*

3.2.12.1 I stand by this comment on the basis of my preceding commentary within this part of my Supplemental Statement.

3.3 **Additional comments with respect to Exova's Opening Statement**

I make the following comments with respect to Exova's Opening Statement using the paragraph numbers contained therein:

3.3.1 Paragraph 2.28

- 3.3.1.1 I would not expect drawings submitted to a planning authority in relation to a planning application to specify a particular insulation material or manufacturer. That is a matter for Building Control.

3.3.2 Paragraph 3.1(G)

- 3.3.2.1 If the implication is that a planning authority should have regard, when considering a planning application with respect to a cladding material, to issues of safety or the potential of that material to comply with Building Regulation requirements or the guidelines of ADB2, I can advise (both as an architect and one who trained as a Town Planner) that such regard would be inconsistent with my experience, and with my understanding of the role and statutory duties of a planning authority.

3.3.3 Paragraph 4.2

- 3.3.3.1 Exova concludes within paragraph 4.2 that the evidence suggests that the design team, led by Studio E, anticipated meeting the requirements of the Building Regulations through adopting the guidance of ADB2; that is, through compliance with ADB2 paragraphs 12.6 to 12.9, as opposed to through the alternative route described under ADB2 at paragraph 12.5.
- 3.3.3.2 This accords with the conclusions of my Report (for example at paragraph 3.2.8); that Studio E, both at pre and post novation stages, sought to comply with the guidance in ADB2 at paragraphs 12.6 to 12.9.

3.3.4 Paragraphs 4.3 and 4.5

- 3.3.4.1 Exova then makes two very important points at paragraphs 4.3 and 4.5 of its Opening Statement from which I quote the following extracts:

‘Construction companies need no specialist advice to be aware of them (the Building Regulations and Approved Document B); nor, likewise, do those involved in designing cladding systems need to be pointed towards the provisions relevant specifically to external fire spread’ (paragraph 4.3)

And, most importantly:

The extent to which specialist (fire engineering) input was needed, in order to determine whether a particular cladding system was compliant, would vary depending on the route adopted... designing a bespoke engineered solution would require advance fire engineering expertise’. (paragraph 4.5)

- 3.3.4.2 It is not clear whether, in making these comments, Exova is referring merely to the rainscreen cladding (and its supporting rails and brackets etc.) in isolation, or whether it is referring to the entire over-cladding arrangement (which would also include (as mentioned earlier herein) the envelope insulation installed within the cavity created by the rainscreen system, the cavity barriers, the window infill panels and the window head, jamb, sill interface).
- 3.3.4.3 With respect to these submissions on the part of Exova, I agree:
- a) that architects should routinely, as part of their training, be able to understand the requirements of the Building Regulations and be able to understand and apply the guidance contained within the Approved Documents in the process of choosing a rainscreen cladding system and developing the design for an entire over-cladding arrangement that is being developed under the 'linear route' to compliance with the Building Regulations (that is through the adoption of the guidance given under ADB2 as was the approach in this case); and
 - b) that the extent to which specialist fire consultant input is needed in such situations would depend on the route to compliance that is adopted.
- 3.3.4.4 The corollary of this is also true; that is, that a specialist fire engineer should not normally be required to assist an architect in interpreting and applying the guidance of ADB2 with respect to specifying the materials within, and designing the arrangements for, an external wall, or an over-cladding system as applied to an external wall.
- 3.3.4.5 Notwithstanding the above comments, Studio E was of course at liberty to call on the advice of a specialist fire engineer to assist in the interpretation of ADB2 with respect to the design of the over-cladding system that formed part of the 2012-16 Works.
- 3.3.4.6 However, it seems that in relation to the over-cladding work, despite having arranged for Exova to provide fire advice in relation to the design and specification of the over-cladding to the external walls of the building, Studio E did not choose to chase up or insist upon receipt of Exova's final analysis of the proposed refurbishment when it was not forthcoming within Exova's reports at Issues 1, 2 and 3.
- 3.3.4.7 The extent of the help, if any, that Studio E did receive from Exova in developing the design and specification of the various elements that made up the over-cladding arrangement will, however, be a matter for evidence.

- 3.3.4.8 It seems to me that Exova failed in its checking duty as clearly set out under the 9 May 2012 fee proposal, to point out to Studio E pre-novation, and thereafter to Artelia as KCTMO's Employer's Agent, or indeed directly to KCTMO, that with respect to the over-cladding proposals, the specification and design were in many important respects non-compliant with the requirements of the Building Regulations and/or the guidelines as contained within ADB2.

3.3.5 **Paragraph 4.12**

- 3.3.5.1 It will be a matter for the Inquiry to determine what interpretation should be put on the statement by Exova that:

'It (was) considered that the proposed changes will have no adverse effect on the building in relation to external fire spread but this will be confirmed by an analysis in a future issue if this report'.

- 3.3.5.2 It seems reasonable to me to expect a specialist fire consultant, in making such a comment in relation to a proposed over-cladding system, to have considered all available information relating to that proposal that was available at the time. Had Exova properly scrutinised the information that was available when making that statement again within the third issue of its Fire Strategy report on 7 November 2013, Exova would have discovered (as it should have done on many earlier occasions) that PIR insulation was indeed proposed, and against that discovery, it should have raised alarm bells as set out above from paragraph 3.2.2.
- 3.3.5.3 In this respect I consider that Exova's commentary at paragraph 4.12 to the effect that '*no detailed specification or design had been set*' to be thoroughly misleading. I conclude this because it seems to me that the term 'proposed changes' as used by Exova can only reasonably be interpreted to be a referral to the entire over-cladding arrangement (that is the envelope insulation, the cavity barriers, the window infill panels and the window head, jamb, sill interface) as opposed to just the addition of a rainscreen cladding element.
- 3.3.5.4 Of these, it is entirely reasonable to conclude that detailed design arrangements for the cavity barriers, window infill panels and the window head, jamb and sill interfaces might be further addressed later, but the principal specification choices and arrangements pertaining to all these elements of the over-cladding arrangement in terms of both specification and design arrangement had, as set out within my report and earlier herein, been set at the time of Exova's issue of its third Fire Strategy report on 7 November 2013.

3.3.6 Paragraph 5.16

- 3.3.6.1 I agree with the comment under (ii) that *'Exova was not responsible for the selection of materials (for the cladding or any other purpose) or the detailed design (of the cladding or any other system).'* I do not agree that *'the information Exova had would have been outdated, and either incorrect or at best inadequate for the purpose of reg. 38'*. I consider this to be thoroughly misleading.
- 3.3.6.2 At (2) of Regulation 38 an obligation is set for *'fire safety information'* to be given to *'the responsible person'* not later than the date of completion or occupation of the building, whichever was sooner.
- 3.3.6.3 *'Fire safety information'* is defined at (3)(a) as *'information relating to the design and construction of the building'*.
- 3.3.6.4 Clearly the responsibility for compiling this information fell to others (not Exova) but the Inquiry will note that the *'information relating to the design and construction of the building'* would have included specification and design arrangements that had been developed by the design team at a point at which Exova was engaged.
- 3.3.6.5 The failure of Exova to draw attention to the non-compliance of the PIR insulation and the non-compliant arrangements/positioning of the cavity barriers during its appointment has been discussed earlier within this commentary. It is clear to me that, contrary to the claim that *'the information that Exova had would have been outdated'*, in these two respects the design and specification errors had been evident at the time of Exova's pre-November 2013 involvement and had never been rectified.
- 3.3.6.6 In this respect the Inquiry will determine what right, if any, the person responsible for providing fire safety information under Regulation 38 had to rely on the part that Exova had played (directly or indirectly) in its preparation.

3.3.7 Paragraph 5.26

- 3.3.7.1 I draw particular attention to the first two sentences of this paragraph:

'Exova's fire strategy reports were prepared in part on the basis of designs provided to it by Studio E. Those reports represented advice that could assist Studio E, or other participants, in modifying those designs, or preparing further designs.'

3.3.7.2 Had Exova provided, as it should have done, appropriate advice against for example the column/window arrangement and window head and sill arrangements shown on Studio E's drawing number 1279 (06) 110 00 (respectively Figures 4.44 and 4.49 of my report) with respect to the over-cladding proposals in terms of the PIR insulation's non-compliance with the requirements of paragraph 12.7 of ADB2, and the errors in the various omissions and mis-positioning of cavity barriers during RIBA Work Stage D/E of its work (as referred to at paragraph 5.6(B) of Exova's Opening Statement), it is my opinion that Studio E would have been *'(assisted) in modifying those designs or preparing further (compliant) designs'*.

3.3.8 Paragraphs 5.30(C) and (F(5))

3.3.8.1 At paragraph 5.30(C) Exova states that it *'attended design team meetings as and when requested to do so'* and at paragraph 5.30(F5) it states that it provided advice (*'outside its reports'*) on *'The fire resistance of cavity barriers'*.

3.3.8.2 It will be a matter of evidence, but it is inconceivable to me that a competent fire consultant could provide such advice without having properly established the overall construction proposals for the over-cladding and the detailed arrangements in terms of the proposed positioning of the cavity barriers.

3.3.9 Paragraph 6.1 (A)

3.3.9.1 Exova seem to use the terms *'cladding system'* (both here and elsewhere) and *'unlawful cladding system'* in an ambiguous way. In so doing it implies that all issues pertaining to design and specification choices relating to the entire over-cladding arrangement took place after Exova's involvement with the project (post 7 November 2013) had ceased. This is not correct.

3.3.9.2 As I have made clear on a number of occasions herein, I consider any implication that the cladding *'system'* should be taken to include anything but the whole of the over-cladding arrangement is misplaced.

3.3.9.3 The choice of PIR insulation, and the design arrangements of the cavity barriers both in terms of omission and mis-positioning does appear to have been *'unlawful'* in that in both cases they failed to meet the requirements of the Building Regulations by failing to comply with the guidance set out in ADB2. It is my opinion that Exova's failings contributed to both these errors.

3.3.9.4 It is my opinion that Exova's claim that *'it at no point endorsed the system in question'* is mis-leading. The *'system'* in question, in my opinion, included the entire over-cladding arrangement, large parts of which Exova effectively endorsed during its appointment.

3.3.10 Paragraph 6.1 (B)

3.3.10.1 As shown above:

- a) In relation to point (1), information was available to Exova during its appointment in relation to the over-cladding proposals upon which it could have commented.
- b) In relation to point (2), Exova had a duty determine *'any external fire spread issues that there may be and the impact this may have on the architectural design'* as set out under RIBA Work Stage D/E of its work (as defined at paragraph 5.6(B) of its Opening Statement).
- c) In relation to point (3), serious consequences flowed from Exova's failure to advise Studio E of the inappropriateness of the PIR insulation and the cavity barriers in terms of their failure to respectively meet the guidance provided in paragraphs 12.7 and 9.3 of ADB2, and in consequence the requirements of the Building Regulations.

3.3.11 Paragraph 6.10

- 3.3.11.1 My criticism is not that Exova failed to design a bespoke cavity barrier 'system' around the windows, but that it failed to draw Studio E's attention to their omission of cavity barriers to the sills of windows and their apparent mis-positioning of them and/or inadequate provision of them to the jambs (as illustrated at Figures 4.49 and 4.51 of my report).

4 Artelia Projects Ltd – Response to Opening Statement

4.1 Introduction

4.1.1 In this section I respond to Artelia Projects UK Ltd.'s Opening Statement. It addresses the items contained therein which warrant further commentary with respect to the position as set out in my report.

4.1.2 Thereafter I make some additional comments on other parts of Artelia's Opening Statement in instances where I think my opinion might be useful to the Inquiry.

4.1.3 I am critical of Artelia on three occasions within my Report, and question its performance on a fourth occasion, as follows:

- a) **Section 4 paragraph 4.4.15** wherein I criticise Artelia (as well as Rydon and Studio E) for failing to ensure any follow up post novation on the outstanding part of Exova's Outline Fire Safety Strategy Report Issue 3 of 7 November 2013 {EXO00001106} which had stated the following at paragraph 3.1.4:

'Compliance with B4 (external fire spread)':

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

- b) **Section 4 paragraph 4.4.16(c)** wherein I criticise Artelia (as well as Rydon and Studio E) for apparently failing to realise *'that much design and specification work remained to be carried out, both with respect to work that should have been done under the appointment of consultants to KCTMO, and with respect to variations that Rydon would be instructing, especially with reference to the over-cladding work.'* I further criticise Artelia within this paragraph (as well as Rydon and Studio E) for apparently failing to realise that *'the design and specification work as available at the outset of the novation would need significant further development and that the work of the specialist fire consultant as carried out under the KCTMO appointment had not been brought to a stage of completion that formed a satisfactory basis on which to proceed with the post-novation design and specification further development.'*

- c) **Section 4 paragraph 4.4.22** wherein I criticise Artelia (as well as Rydon and Studio E) for failing to insist on a 'fuller' service from Exova, as part of the Design and Build team, following the appointment of Rydon as Design and Build contractor, or alternatively failing to ensure that Studio E, as architects, got properly to grips with the requirements of ADB2 and applied them diligently through the construction documentation stage.

- d) Whilst falling short of formal criticism, at **Section 6 paragraph 6.3.7** I also question, on the assumption that Studio E were not ISO 9001 registered, whether Artelia or Rydon *'took any steps to ensure that the protocols of ISO 9001 were in any event*

applied by Studio E, and that they were applied diligently and with proper effect to ensure that appropriate quality reviews were carried out by Studio E on its own work as it progressed’.

- 4.1.4 None of those criticisms of Artelia should be taken as reason to exonerate or otherwise reduce my criticisms of others against whom I have commented disparagingly elsewhere in my Report or Supplemental Report.
- 4.1.5 However, having read Artelia’s Opening Statement, I have found it necessary in some instances to qualify or further explain my criticisms of Artelia. I deal with this by way of further commentary on each of the four issues (a) to (d) that I have listed above.
- 4.1.6 Before offering that commentary, I make the following general comments in relation to Artelia’s appointment:
- 4.1.7 In paragraph 2.2 of its Opening Statement Artelia states that it conducted only three roles in relation to the Grenfell project under its appointment to KTCMO. These roles comprised ‘RICS Employer’s Agent’, ‘RICS Quantity Surveyor’ and ‘RICS CDM-Coordinator’.
- 4.1.8 The pre-fix ‘RICS’ is particularly important with respect to Artelia’s role as Employer’s Agent because this role can be carried out by members of different professional disciplines. The RICS defines this role and offers a bespoke form of appointment in this respect.
- 4.1.9 It is against these terms of appointment that I have assessed and commented upon Artelia’s performance as Employer’s Agent in this Supplemental Report. In this respect it is important to note that I comment in terms of what I would, as an architect, expect of an Employer’s Agent appointed under the RICS document.
- 4.1.10 It is notable that Artelia remained ‘Client side’ throughout the project; that is, it was not novated to Rydon. This is normal under Design and Build procurement with respect to Cost Consultants and Employer’s Agents.
- 4.1.11 At paragraph 11.46 of its Opening Statement Artelia states that my Report is incorrect in its assertion that Artelia undertook the role of Project Manager as well as that of ‘TMO’s Client Representative’. I acknowledge this error and address the same at paragraphs 1.2 and 1.5 of Part 1 of this Supplemental Report.
- 4.1.12 Artelia formally proposed its Employer’s Agent, Quantity Surveyor and CDM Coordinator services on 2 May 2012, on terms selected from the RICS Standard Form of Consultant’s Appointment. The TMO confirmed that appointment on 21 August 2012 {ART00006259}. In June 2014, Artelia proposed an amended version of the RICS Standard Form of Consultant’s Appointment. This was signed by the TMO in July 2014. Schedule 1 of the Appointment contains the services that Artelia proposed and which were agreed at that time. KCTMO agreed the appointment on those terms in July 2014 {ART00005742}.

- 4.1.13 In the interim, Artelia (as Appleyards) issued a draft for a revised brief during June 2013 which suggested that it would take on a full 'Project Manager/Employer's Agent role' {ART00001219/2}. But, as noted above, the final Appointment was signed on 23 June 2014 and that Appointment did not include the Project Manager role.
- 4.1.14 For the purposes of this Supplemental Report I am assuming that Artelia held the role of Employer's Agent continuously from the project's inception to its completion and at no stage accepted a formal appointment as Project Manager.
- 4.1.15 I note at paragraph 7.7 of its Opening Statement that Artelia suggests that KCTMO was a '*well-resourced, sophisticated and experienced*' organisation. Artelia further suggests at paragraphs 7.9 and 7.10 that the TMO acted, de facto, as Project Manager.
- 4.1.16 It will be for the Inquiry to determine whether such a role was indeed adopted by the TMO, and if so whether this in any way lessened either the scope or the quality of service expected of Artelia as Employer's Agent. I have assumed that neither the scope nor the quality of service that would ordinarily be expected of Artelia under the terms of its appointment as Employer's Agent was in any way lessened.
- 4.1.17 Attached to the Artelia appointment document was a schedule containing the RICS version of the 'Employer's Agent Services' duly filled in to confirm those services which Artelia were responsible for delivering {ART00005742/44}. I refer specifically to items in that schedule in my commentary below. However, I acknowledge that each service in the schedule should not be read in isolation. I note that there are a number of services set out in the RICS' Standard Form which Artelia did not propose to provide. In particular, the RICS Standard Form for Employer's Agent services includes:

Paragraph 1.2.5: 'Advise the Client on specialist services, including consultants, contractors, sub-contractors and suppliers required in connection with the Project';

Paragraph 1.2.8: 'Advise the Client on the selection, the terms of appointment and the fee structures for the Professional Team. Advise the Client on the design services required under the Building Contract' {ART00005742/47}.

I note that these are set out as obligations in the Pre-Construction Stage.

- 4.1.18 The empty tick boxes against these descriptions show that Artelia did not contract to perform these services. I have kept this in mind in my analysis.
- 4.1.19 It will be for the Inquiry to determine what, if any, value it attaches to Artelia's claim at paragraph 8.1.4 of its Opening Statement that '*the purpose of that appointment (Artelia as Employer's Agent) was to provide it (the TMO) with the necessary (and significant) support of an administrative nature to ensure that the building contract was efficiently administered and the Project progressed according to its programme in an appropriate manner*'.

- 4.1.20 In preparing this response, I have not accepted this qualification which indicates a very passive role on the part of Artelia. It is my view that the Employer's Agent Services form as duly filled in indicates a far wider role than one of a merely 'administrative nature'.
- 4.1.21 Accordingly, although I accept that by the 'omission' of paragraph 1.2.5 (*'Advise the Client on specialist services, including consultants, contractors, sub-contractors and suppliers required in connection with the Project'*) Artelia were not required to advise the client on either the scope of those services, or the suitability of appointments in each of those cases, I do consider that the inclusion of paragraph 1.1.4 of the Employer's Agent Services form which states, *'Monitor the performance of the Professional Team and the Contractor. Report to the Client'* provides a clear indication that Artelia's role as Employer's Agent extended beyond that of a mere 'administrative nature'.
- 4.1.22 I now offer my commentary on each of the four issues (a) to (d) that I have listed above:

4.2 Section 4 paragraph 4.4.15

- 4.2.1 I comment, in relation to this particular issue, against the following specific duty that Artelia had assumed as listed under the 'Employer's Agent Services':

'Paragraph 1.1.4: Monitor the performance of the Professional Team and the Contractor: Report to the Client' {ART00005742/47}.

- 4.2.2 Much will turn here on the interpretation of the word 'monitor' and in particular whether it has an active or passive meaning. For example, did the role of monitoring merely require Artelia to observe and record activity and/or progress, or was it under an obligation to take appropriate steps to ensure that work was performed properly?
- 4.2.3 This will of course be a matter for the Inquiry to determine, but I provide the following commentary which I hope will be of assistance in this respect.
- 4.2.4 The duty under paragraph 1.1.4 was listed under the heading 'Generally', which I interpret to be a service that was to be consistently provided throughout the duration of the appointment.
- 4.2.5 I would not expect an Employer's Agent appointed under the RICS 'Employer's Agent Services' document to be responsible for checking that the work carried out by other specialist consultants had been done 'properly'. To do so would frequently require specialist knowledge and skill outside that held by an Employer's Agent. However, I consider it reasonable to expect that in this context an Employer's Agent would check that specific and designated tasks (particularly those that had been clearly noted as outstanding during the course of the work) had been carried out to the point of satisfactory 'sign-off' and completion.
- 4.2.6 In Issues 1, 2 and 3 of Exova's Outline Fire Safety Strategy {EXO00000519}, {EXO00000430} and {EXO00001106} respectively, Exova stated that in respect of *'Compliance with B4*

(external fire spread)’ the effect of the ‘proposed changes’ on the building ‘will be confirmed by an analysis in a future issue of this report’.

- 4.2.7 In my opinion, parties to this contract would have understood that the scope of Artelia’s duty as Employer’s Agent under paragraph 1.1.4 extended to monitoring the progress and delivery of this future report by Exova, and that this duty continued until Artelia was satisfied that the work had been completed and signed-off by a competent member of the design team.
- 4.2.8 In order to properly carry out such a duty it would have been necessary for Artelia, in its capacity as Employer’s Agent, to read the Exova Outline Fire Safety Strategy reports and to note that this item of work remained outstanding until such time as it was indeed signed off. In this respect I would expect an Employer’s Agent acting with appropriate care to routinely read reports of this kind in order to properly discharge its duty.
- 4.2.9 It will be a matter of evidence as to whether Artelia read any of Exova’s Outline Fire Safety Strategy reports, and whether it reported on this matter to its client (KCTMO) at any point prior to Rydon’s appointment. I have seen no evidence that it did either of these things. If it did not read Exova’s reports, or report to its client on this outstanding matter, this would seem to me to be a failure on the part of Artelia to meet its obligations under paragraph 1.1.4 of its service agreement.

4.3 Section 4 paragraph 4.4.16(c)

- 4.3.1 With respect to the first criticism, that Artelia (as well as Rydon and Studio E) apparently failed to realise *‘that much design and specification work remained to be carried out... especially with reference to the over-cladding work’*, I set out below my comments against the following specific duties that Artelia had assumed as listed under the ‘Employer’s Agent Services’.
- 4.3.2 Paragraph 1.3.3: *‘Establish the roles and responsibilities of the Client, the Professional Team, the Contractor and specialist/design sub-contractors’* {ART00005742/48}.
- 4.3.3 In this respect Artelia was responsible for establishing, during the Design Phase, the respective roles of all the parties involved in the project and, implicitly in doing so, for ensuring that the respective roles were complementary and clearly understood by all concerned. This included ensuring that no ‘gaps’ existed to the services that would be required to service the project.
- 4.3.4 Paragraph 1.3.4: *‘Liaise with the Professional Team and prepare a scheme design, or similar, report summarising the Project design, cost programme and risk register’* {ART00005742/48}.
- 4.3.5 In this respect I note in particular that Artelia was responsible for establishing, during the Design Phase, a risk register (see also paragraph 2.1.5 {ART00005742/49}). In my opinion such a register should have identified risk in relation to any outstanding/incomplete

matters pertaining to the scheme design and in this respect should have noted that the Fire Safety Strategy report was still incomplete with respect to the external cladding.

- 4.3.6 Paragraph 1.4.1: *'(Pre-Construction) Prepare and maintain a Project execution plan, or similar management tool, identifying the roles and responsibilities of the Client, the Professional Team, the Contractor and specialist sub-contractors/suppliers. Establish review, approval, variation and reporting procedures. Prepare recommendations for the Client's approval'* {ART00005742/48}.
- 4.3.7 It is notable that this was a specific duty to be carried out by Artelia; that is, Artelia was required/expected to perform this duty of its own accord. There is no suggestion that others were to assist in this task, or that Artelia was to gather and pass on the work of others in this respect. It was clearly Artelia's obligation, and Artelia's alone, to prepare and maintain the Project execution plan.
- 4.3.8 I have neither seen a copy of either Artelia's 'Project execution plan' nor have I seen any 'recommendations' that Artelia may have provided in this respect for the Client's approval. However, and if indeed either exist, I would expect such documents to identify under *'roles and responsibilities'* that the role of Specialist Fire Consultant would be required and should be provided by either:
- a) Exova, under novation to Rydon with the express duty to provide such assistance as required by the novated design team, or in the alternative, retained by KCTMO with an express duty to review and report on the work of the novated Design Build Contractor with respect to all matters relating to fire safety;
 - b) An alternative Fire Consultant/Specialist appointed by Rydon with the express duty to provide such assistance as required by the novated design team.
- 4.3.9 During the course of preparing such a 'Project execution plan' and 'recommendations for the Client's approval', I would expect Artelia to have identified that the Fire Strategy Report of 7 November 2013 did not contain the final analysis of compliance in respect of B4 (external fire spread) and thus remained as work that was not complete. Having failed in the first instance to notice and report the fact that Exova had not finished its work with respect to the analysis that had been promised about the over-cladding, Artelia apparently failed to note or report on the fact that no substitute arrangements had been made for completing Exova's work under the Pre-Construction phase (RIBA Stage F, see pages 167 to 237 of RIBA Job Book [INQ00013943]). The matter should accordingly have been treated with the utmost urgency and importance.
- 4.3.10 Paragraph 1.4.4: *'(Pre-Construction) Liaise with the Professional Team and prepare a pre-construction report summarising the Project design, cost, programme and risk register. Establish review, approval and variation and reporting procedures. Prepare recommendations for the Client's approval'* {ART00005742/48}.

- 4.3.11 In this respect, I have neither seen a copy of Artelia's *'pre-construction report'* nor have I seen the *'recommendations'* that Artelia provided *'for the Client's approval'*.
- 4.3.12 However, and if indeed such a document exists, I would expect it to identify that issues relating to Exova's Outline Fire Safety Strategy reports remained outstanding. In my opinion such a pre-construction report should, in summarising the design, clearly identify any significant parts of the design and specification work that had not been completed. In this respect I would not expect an Employer's Agent to be responsible for auditing or checking the quality of the work of other specialists, but it is in my opinion reasonable to expect that routine checking should be carried out by an Employer's Agent in order to ensure that work identified and listed as outstanding in other consultants' reports had been tracked and monitored until completed and/or signed off. This is especially the case in a matter as important as an outstanding part of a Fire Safety Report. It will of course be for the Inquiry to determine what *'summarising the Project design'* means, but it would seem to me that as this is linked to cost, programme and risk it should be interpreted as a review of the completeness of information and its suitability as a basis for construction.
- 4.3.13 I would also expect that the outstanding analysis of the over-cladding in relation to B4 of the Building Regulations would feature on the risk register and thereafter be closely monitored by Artelia until signed-off by a competent team member as satisfactorily completed. I understand that although some risk registers were created (for example {ART00000483}) they did not contain reference to the outstanding matters pertaining to B4 of the Building Regulations.
- 4.3.14 Paragraph 1.4.9: *'(Pre-Construction) Liaise with the Professional Team and assist with specialist enquiries to assess alternative contractor's proposals. Prepare recommendations for the Client's approval'* {ART00005742/48}.
- 4.3.15 As Employer's Agent, Artelia clearly had an active duty in this respect. That is, Artelia was under a specific duty to *'assist with specialist enquiries'* as opposed to merely ensuring that such enquiries were carried out by others. Thereafter, Artelia had a specific duty on its own account to *'prepare recommendations for the Client's approval'*.
- 4.3.16 Ultimately, a decision was taken to recommend to KCTMO that the Reynobond system should be adopted in lieu of the Proteus HR zinc system.
- 4.3.17 Paragraph 1.4.12: *'(Pre-Construction) Liaise with the Client and the Professional Team and advise on methods of progressing design and/or construction works prior to the execution of the Building Contract'* {ART00005742/48}.
- 4.3.18 My interpretation of this paragraph is that it is referring to the method of procurement of the works. In this case Design and Build was selected as the preferred arrangement. If I am right in that respect, *'advise on methods of progressing the design'* would seem to me to relate to advice with respect to the point of novation of the design team, and the extent of design and specification work that would be carried out prior to the issue of the Employer's Requirements.

- 4.3.19 The decision was taken to obtain tenders on a relatively advanced state of documentation and this is reflected in Studio E's appointment which confirms both that the procurement route would be by way of Design and Build contract (Project Data 2010 as contained at Appendix A of Studio E appointment {SEA00009823/2}), and that the novation of Studio E to the Design and Build contractor would comprise RIBA Work stages F2/K/L (see Appendix D of Studio E appointment {SEA00009826}).
- 4.3.20 In terms of '*methods of progressing the design*' such advice might well be expected (further to the duties under paragraph 1.4.1 – *Prepare and maintain a Project execution plan, or similar management tool etc.* - as discussed above) to have focused on clearly defining the respective duties of Studio E and Harley as the specialist over-cladding' sub-contractor in terms of:
- a) Ensuring that their work was properly integrated; and
 - b) Ensuring that checks were carried out to ensure that there were no gaps or omissions in the development of the design or the production information as produced.
- 4.3.21 In this respect I would not expect Artelia to itself undertake an audit of Studio E's work or indeed of Rydon's work in terms of their respective design responsibilities. I would, however, expect Artelia to ensure that such audits were properly carried out and reported upon.
- 4.3.22 Through ensuring that such an audit was properly undertaken, any such shortfalls in the scope of work to be carried out by Studio E and Harley would have been addressed and responsibility for completing (Studio E) and properly completing (Harley) the design/production work required under both Studio E and Rydon's respective appointments to KCTMO could thereafter have been routinely allocated.
- 4.3.23 With respect to the second criticism, that the work of the specialist fire consultant as carried out under the TMO appointment had not been brought to a stage of completion that formed a satisfactory basis on which to proceed with the post-novation design and specification further development, I refer the Reader again to paragraph 4.2 et seq above.

4.4 Section 4 paragraph 4.4.22

- 4.4.1 I refer the Reader again to paragraph 4.3 et seq above.

4.5 Section 6 paragraph 6.3.7

- 4.5.1 I have dedicated an entire section of my report (Section 6) to the issue of quality control.
- 4.5.2 The RIBA Job Book {INQ00013943} places great emphasis on the importance of rigorous ongoing checking protocols at every stage of an architect's involvement in a project. This is particularly emphasised at the commencement and conclusion of each respective RIBA Work Stage.

- 4.5.3 However, and irrespective of the RIBA's recommended processes, so important is this subject to the successful delivery of a project that many clients will not engage construction consultants unless they are ISO certified and registered.
- 4.5.4 As set out in my Report, Studio E in the form of SELLP was so registered. Evidence given under examination to the Inquiry by Mr Kuszell of Studio E indicated that, contrary to my previous understanding, SEAL was also ISO certified and registered. I have seen no documentary evidence to support this assertion but have prepared this Supplementary Report on the basis of Mr Kuszell's oral evidence.
- 4.5.5 As is set out in my report (for example under paragraphs 6.7.12, 6.7.13 and 6.7.14) Technical Reviews as required under ISO 9001 were carried out by Studio E intermittently, late, and without appropriate thoroughness.
- 4.5.6 Had such reviews been carried out diligently and in timely manner, many of the errors and omissions that arose with respect to Studio E's work would have been identified at the appropriate time and steps could have been taken to correct such errors and omissions accordingly.
- 4.5.7 It is my opinion that, in carrying out its duties under paragraphs 1.3.4 and 1.4.4 of its appointment in relation to setting up and reporting to the TMO with respect to the risk register, and under paragraphs 2.1.4 and 2.1.5 in facilitating, setting up, managing and contributing to early warning and risk reduction meetings, Artelia should have sought confirmation and indeed evidence from Studio E that it was carrying out technical reviews in a thorough and timely manner throughout all stages of its work as required under its ISO 9001 registration.

4.6 Further Commentary

- 4.6.1 In my Supplemental Statement Part 2 at paragraphs 3.1.13 to 3.1.14 I expressed the view that *'other parties such as Artelia had duties that overlapped with, or indeed in some circumstances relieved Studio E of, specific duties entirely'*.
- 4.6.2 In making this comment I was, as well as referring to the express duties of Studio E and Artelia as contained in their respective appointment documents, also alluding to recent developments within the construction industry whereby some roles that had been considered to be expressly the preserve of the architect under traditional contracting have increasingly been shared or indeed assumed in their entirety by other consultant disciplines. In respect of the 2012-16 Works Studio E has, in some cases, shared roles with others such as Artelia. In some cases Studio E was 'relieved' of responsibilities by Artelia; responsibilities that Studio E would otherwise have assumed under a traditional procurement.

4.6.3 Examples of these (albeit not exhaustive) can be seen in Artelia's Employer's Agent Services document as duly annotated and accepted as the basis for its appointment to KCTMO for the 2012-16 Works. I list a series of these examples below with my comment in each case as it relates to the relative responsibilities of Artelia and Studio E.

4.6.4 Example 1: Paragraph 1.1.2 of Artelia's Appointment {ART00005742/47}

'Issue instructions, on behalf of the Client, to the Professional Team and Contractor in accordance with the terms of their Appointments/the Building Contract.'

- a) This clearly establishes Artelia as an 'agent' of the client.
- b) Under traditional contracting the role of 'agent' is held by the architect in terms of instructing other consultants in their day to day work and following the appointment of the builder in terms of instructions given to contract.
- c) Pre its novation to Rydon, Studio E appears to have had a role in issuing instructions to other consultants.
- d) Post its novation to Rydon, Studio E retained no such role on behalf of KCTMO with respect to other consultants.
- e) Furthermore, once novated Studio E had no authority to instruct the contractor (Rydon) on behalf of KCTMO.
- f) Artelia retained its role in this respect and had an exclusive duty under paragraph 1.1.2 to *'Issue instructions on behalf of the Client'* (KCTMO) *'to (both) the Professional Team and the Contractor (once appointed).'*

4.6.5 Example 2: Paragraph 1.1.4 of Artelia's Appointment

'Monitor the performance of the Professional Team and the Contractor. Report to the Client.'

- a) Particularly in the context of the Contractor, and especially with respect to quality of workmanship and pace of performance, this task was the preserve of the architect under traditional contracting.
- b) Post novation to Rydon, Studio E had no such role on behalf of KCTMO and indeed had no authority to report to the TMO on the performance of its (new) client, the contractor (Rydon).
- c) Artelia retained its role in this respect and had a duty under paragraph 1.1.4 to monitor the performance of the Professional Team and the Contractor, and report to the client.

4.6.6 Example 3: Paragraph 1.2.1 of Artelia's Appointment

'Liaise with the Client and the Professional Team to determine the Client's initial requirements and to develop the Client's Brief.'

- a) Historically the preserve of the architect, this role was clearly shared for the 2012-16 Works between Studio E and Artelia (as Employer's Agent).

4.6.7 Example 4: Paragraph 1.2.10 of Artelia's Appointment

'Liaise with the Professional Team and advise the Client on statutory approvals required and fees due in respect of the Project.'

- a) This suggests to me that Artelia were responsible for obtaining opinion and advices from the professional team in this respect and thereafter, on its own account, for reporting those advices to KCTMO.
- b) Whether or not Artelia had any duty to interrogate such advice or comment upon it (as opposed to simply passing it on) will be a matter for the Inquiry to determine.
- c) It seems to me that this responsibility, which was historically the preserve of the architect, was shared between Artelia and Studio E for the 2012-16 Works during the pre-novation stages. It similarly seems to me that Artelia had the lead role in the matter as it was Artelia who had the express duty under its Employer's Agent appointment to report (alone) on the matter.

4.6.8 Example 5 Paragraph 1.5.1 of Artelia's Appointment {ART00005742/48}:

'Agree approvals required from the Professional Team under the Building Contract. Administer the Building Contract.'

- a) It is not clear what 'approvals' are referred to here: is it statutory approvals, or approvals of, for example, sub-contractor drawings and specifications?
- b) Likewise, it is unclear whom such agreement is to be made with.
- c) Either way this was historically, under traditional procurement, the province of the architect.
- d) Artelia adopted a leading role in terms of *'agree(ing) approvals required from the Professional Team'*.
- e) It is unclear what Artelia were meant to do with any such agreement as and when reached.
- f) It is however abundantly clear that under this paragraph Artelia were to *'administer the Building Contract'*. This, under traditional procurement, was exclusively the role of the architect.
- g) These roles passed in their entirety to Artelia for the 2012-16 Works.
- h) Artelia administered the building contract on behalf of KCTMO alone: the role was not, and could not, be shared with Studio E who post novation were not employed by KCTMO.

4.6.9 Example 6 Paragraph 1.5.6 of Artelia's Appointment:

'Undertake regular Site inspections.'

4.6.9.1 I deal with this point in greater detail below.

4.6.10 Example 7: Paragraph 1.5.7 of Artelia's Appointment {ART00005742/49}

'Liaise with the Professional Team and make recommendations for interim payments to the Contractor.'

- a) Under traditional procurement, whilst the QS assisted with preparing valuations against which such recommendations would be made, this was the sole preserve of the architect.
- b) Under the 2012-16 Works this duty fell solely to Artelia as Employer's Agent.
- c) Studio E had no formal relationship post novation with the TMO and no authority to make any recommendations with respect to payments to Rydon.

4.6.11 Example 8: Paragraph 1.5.10 of Artelia's Appointment

'Advise on the rights and obligations of the parties to the Building contract.'

- a) The architect carried this duty under traditional procurement but frequently relied on the QS to assist.
- b) Under the 2012-16 Works this role, in terms of advising the TMO, fell exclusively to Artelia.

4.6.12 Example 9: Paragraph 1.6.2. of Artelia's Appointment

'Facilitate agreement of the final (builder's) account...'

- a) Under a traditional procurement, the architect carried out this duty but relied on the QS to assist.
- b) Under the 2012-16 Works this role, in terms of advising the TMO, fell exclusively to Artelia.

4.6.13 Example 10: Paragraph 1.6.3 of Artelia's Appointment

'Advise on the recovery of liquidated and ascertained damages.'

- a) Under a traditional procurement, the architect carried out this duty but relied on the QS to assist.
- b) Under the 2012-16 Works this role, in terms of advising the TMO fell, exclusively to Artelia.

4.6.14 Example 11: Paragraph 2.3.3 of Artelia's Appointment

'Advise to the Contractor's entitlement to extensions of time (claims)'.

- a) The architect carried this duty under traditional procurement but frequently relied on the QS to assist, albeit sometimes such a role was passed to the QS.
- b) Under the 2012-16 Works this role, in terms of advising the TMO fell exclusively to Artelia.

4.6.15 Example 12: Paragraph 2.3.4 of Artelia's Appointment

'Advise on the cost, contractual and programme consequences arising from acceleration instruction.'

- a) The architect carried this duty under traditional procurement but frequently relied on the QS to assist, albeit sometimes such a role was passed to the QS.
- b) Under the 2012-16 Works this role, in terms of advising the TMO, fell exclusively to Artelia.

4.6.16 I would also draw particular attention to paragraph 1.5.6 of Artelia's Appointment which states under Construction (RIBA Outline Plan of Work 2007) that Artelia would, *'Undertake regular Site inspections. Obtain progress and quality reports from site staff representing the Client, the Professional Team and the Contractor'* {ART00005742/48}.

4.6.17 This obligation begs the question as to what sort of site inspections were to be carried out by Artelia, and (of particular importance to the Inquiry), what issues were such inspections to address in terms of assessing the *'progress and quality'* of the over-cladding work.

4.6.18 It is important to note that under paragraph 1.5.1 of its Appointment as Quantity Surveyor Artelia was in any event, and separately, required to *'Visit the Site periodically and assess the progress of the Project for interim payment purposes'* {ART00005742/56}.

4.6.19 Two issues are critical to assessing progress in order to inform the preparation of any valuation that leads to the making of interim and final payments by the Client in favour of the builder (in this case the Design and Build contractor).

4.6.20 The first issue relates to quantity: how much in terms of labour, materials and components has been supplied and incorporated into the project? This is familiar territory for the quantity surveyor and relates to the duty Artelia had under paragraph 1.5.1 of its Appointment as Quantity Surveyor.

- 4.6.21 The second issue relates to quality, and essentially requires a series of judgements as to whether the materials, components and the efforts of the workforce (skilled and otherwise), as supplied and incorporated into the project at the time of the valuation, meet the specification, arrangements and standards as set out under the contract documents (that is the drawings, specifications and other information such as site instructions that have been issued 'to contract'). The ability to make such judgements lies outside the experience and training of a Quantity Surveyor.
- 4.6.22 Under 'traditional procurement' contracting where the architect remains 'client side' throughout the project, at each interim payment stage the architect (who, where appropriate, will consult with others such as the structural or M+E engineers during the process) inspects the work and confirms which parts of the construction are compliant with the contract documentation, and which parts (if any) are sub-standard or otherwise not compliant. The quantity surveyor thereafter carries out a valuation on that basis. In circumstances where any of the materials, components and/or workmanship are found to be sub-standard in terms of compliance with the contract documentation, the architect notifies the quantity surveyor and a downward adjustment to the valuation upon which the interim payment will be made takes place. The architect then certifies the payment that is due to the contractor. In smaller projects that are 'traditionally' procured, and which do not have an appointed quantity surveyor, the architect usually carries out both roles: that is valuation and certification.
- 4.6.23 However, under Design and Build contracting the process is very different. Following novation, the architect has little, if any, role in the valuation process and has a very much reduced role, if any, in terms of formally assessing the work as it proceeds in terms of its quality and compliance with the contract documentation.
- 4.6.24 It is important to note that these arrangements are, for obvious reasons, much preferred by contractors: architects' inspections which lead to reductions to valuations (effectively the withholding of monies) can frustrate the progress of construction work and impact adversely on cash flow and profit.
- 4.6.25 Unlike Artelia under its role as Employer's Agent (paragraph 1.5.6) {ART00005742/48}, Studio E had no ongoing duty to 'undertake regular Site inspections' or to 'obtain progress and quality reports from site staff representing the Client, the Professional Team and the Contractor.'

- 4.6.26 In summary, Studio E's role with respect to visiting the site and inspecting construction work was essentially reactive in that it was required to make 25 visits to the site under the Deed of Appointment {RYD00094228/12} such visits being implicitly at the behest of the contractor, and no doubt intended to relate to meetings and assistance with problem solving as opposed to any form of quality inspection (see for example paragraph 16 of the Schedule of Services '*Liaise with site and respond to construction queries*' and paragraph 18 '*Attend site as reasonably required during the construction process*' [RYD00094228/9}). Nowhere in the Deed of Appointment, or the Schedule of Architectural Services attached thereto, is Studio E called upon to inspect or comment upon construction work in terms of its general quality or compliance with the construction documentation.
- 4.6.27 It is important to note that following novation Studio E not only had no duty to inspect or comment on construction work as carried out, unless so invited to do by the Contractor, it also had no authority to instruct any remedial work with respect to any defective construction. Furthermore, Studio E had no duty to report defective workmanship to its hitherto client (the TMO).
- 4.6.28 I have no doubt that had Studio E drawn the attention of Rydon to any error or omission in the work that was dangerous, Rydon would have responded accordingly, but Studio E had absolutely no authority to require remedial work in otherwise defective or shoddy workmanship or materials (for example the appearance of the inner window reveals).
- 4.6.29 In contrast, Artelia's responsibility as Employer's Agent was clearly pro-active. Under paragraph 1.5.6 it had to '*Undertake regular Site inspections*'. In this respect it was clearly a matter for Artelia to determine in the best interests of the TMO, when it should visit site, and in that respect, where and what it should inspect. Its appointment was silent on what Artelia should do with '*progress and quality reports* (that it obtained as required) *from site staff representing the Client, the Professional Team and Contractor*' but common sense would suggest that it should have read them carefully and ensured that any reports of defective workmanship, or other matters of concern were followed up upon and remedied/resolved.
- 4.6.30 KCTMO therefore, under the Design and Build procurement arrangements that prevailed, would have relied heavily on the advices it received from Artelia with respect to the progress of the construction in terms of its quality, even if those advices were in part, or wholly based on information provided by others such as the Clerks of Works. It will no doubt therefore be a matter of interest to the Inquiry to establish what '*progress and quality reports*' Artelia indeed obtained from '*the Client, the Professional Team and the Contractor*' and in this respect what it did with them.

- 4.6.31 With respect to the window head, jamb, sill interface arrangements as constructed I am very critical of Artelia. At paragraphs 4.3.93 to 4.3.98 of my Report I set out position at Tender Documentation, that is Employer's Requirements, with respect to Studio E's design and specification.
- 4.6.32 In summary, Studio E had specified plywood window reveals and sills. It is reasonable to deduce that this material was also proposed for the window heads, but this was not stated in the specification. Studio E also stipulated that the linings should meet a fire rating standard of '*Class 1 or Class C-s3, d2*' {SEA00000169/249}.
- 4.6.33 Most importantly, Studio E specified that the insulation behind the linings should be '*compressible insulation*' and in this respect specified '*flexible slabs of Mineral wool to BS EN 13162 by Rockwool*' ({SEA00000169/243} see paragraph 4.3.94 of my report). This would have met the requirements of paragraph 12.7 ADB2 in terms of being a material of '*limited combustibility*'.
- 4.6.34 In the event, plastic linings were installed to the window reveals at the head, jamb and sill positions. This installation did not meet the stipulations of the Studio E specification. Harley's drawings were silent on the matter, stating that both the window linings and the insulation behind those linings was to be '*by others*' (see for example Figures 4.80, 4.81 and 4.82 of my report).
- 4.6.35 Whilst the choice of lining to the head, jamb and sill conditions of the window reveals does not appear to breach the guidance in ADB2 (despite the low melting point of the material involved), the incorporation of PIR insulation to the gaps behind the linings was a clear breach of the guidance in paragraph 12.7 of ADB2.
- 4.6.36 I do not know how the PIR insulation came to be incorporated into the construction, neither do I know who chose or instructed its use. I am critical of the Building Control Officers for not identifying this breach of ADB2 guidance during routine inspections. I would also criticise Studio E for failing to draw this breach of ADB2 guidance to the attention of Rydon, assuming it knew that such insulation was being used in this application and failed to query this with Rydon. That, however, will be a matter for evidence.
- 4.6.37 With respect to Artelia, it will be a matter of evidence as to whether:
- a) In its role as quantity surveyor Artelia saw fit under its responsibility against paragraph 1.5.1 of its (QS) Appointment, '*visit the Site periodically and assess the progress of the Project for interim payment purposes*' {ART00005742/56} to make any adjustment to cost with respect to the substitution of plastic window linings and PIR insulation in lieu of the plywood and mineral wool products as incorporated into the Employer's Requirements by Studio E and

- b) In its role as both quantity surveyor under paragraph 1.5.1 of its appointment {ART00005742/56}, and Employer's Agent under paragraph 1.5.6 of its appointment {ART00005742/48}, Artelia obtained satisfactory evidence that the substitution of PIR insulation in lieu of the originally specified mineral wool had been signed off as compliant with the guidance contained in ADB2 and the requirements of the Building Regulations.
- 4.6.38 In terms of composition the substitution of plastic window linings and PIR insulation/packing (in lieu of the plywood and mineral wool as specified under the Employer's Requirements) should have been readily apparent to a quantity surveyor acting as Employer's Agent and arrangement for such a change to have been checked against the guidance contained in ADB2 and the requirements of the Building Regulations should have been put in hand.
- 4.6.39 If no such change was, in this instance, confirmed by some competent party as being compliant with the requirements of ADB2, I believe that Artelia should be criticised for failing to properly perform its duty under paragraph 1.5.6 of its appointment as Employer's Agent.

5 Rydon Maintenance Ltd – Response to Opening Statement

5.1 Introduction

- 5.1.1 In this section I respond to Rydon Maintenance Ltd.'s Opening Statement. It addresses the items contained therein which warrant further commentary or explanation with respect to my position as set out in my report. For ease of referencing I use the same paragraph numbering as Rydon.
- 5.1.2 The overriding impression that I gain from this report is that Rydon seeks to avoid the responsibilities that it carried as a Design and Build contractor. It seems to suggest that it carried a role more akin to that of a traditional builder, albeit in this respect it also seems to reject any suggestion that it should have brought the considerable expertise of both the technical aspects of construction and the processes of building procurement to the project that I would expect of a competent Design and Build contractor familiar with the scale, complexity and type of work represented by the 2012-16 Grenfell Tower refurbishment works.
- 5.1.3 Of particular interest to me in this context, and indeed in the context of all Design and Build contracting, is the issue of authority, as apportioned to the architect post-novation, which in my opinion was not clearly set out under the Rydon Deed of Appointment (and which is not clearly established within the construction industry generally), as opposed to the issue of responsibility, as apportioned to the architect, which was relatively clearly set out in the pre- and post-novation terms for the 2012-16 Works.
- 5.1.4 I suggest that this is a matter that the Inquiry will wish to consider in some detail. My own opinion is that a Design and Build contractor cannot have it both ways: an architect is either, as under traditional construction procurement, an 'agent' of the client in which circumstances he/she assumes the normal responsibilities and particularly authority that goes with the role of 'agent', or the architect carries a lesser authority as was, I believe, the case under Studio E's appointment to Rydon.
- 5.1.5 It certainly seems to me that the tone of Rydon's Opening Statement betrays a suggestion that Rydon had a right to a level of dependency on Studio E, in terms of both the latter's expertise and in the implied scope of its authority, which I think is unfair and unrealistic. Conversely, Rydon seems to abrogate the responsibility which I believe it had to provide a level of expertise and leadership to be expected of a Design and Build contractor that assumes responsibility for delivering a project.
- 5.1.6 I comment in detail on Rydon's Opening Statement below:

5.2 Paragraph 47

- 5.2.1 Design and Build contractors are selected on the basis of price, expertise and resource. I accept that a Design and Build contractor has a right to expect an architect to design and specify the work in a manner that complies with the Building Regulations and other relevant codes and practice guidance as at the time available within the industry. That does not, however, diminish the degree of skill and care I would expect the contractor to exercise in performing its obligations.
- 5.2.2 I would expect a competent Design and Build contractor to take great care at all stages of work (i.e. at tender/pre-appointment and thereafter in discharging its duties post-appointment) in its examination of the drawings and specification as prepared by the architect under both the architect's appointment to the Employer Client and its subsequent appointment to the Design and Build contractor. I would expect the same degree of care in respect of its examination of the work of other appointed consultants, but I restrict my comments here to those relating to the appointment of an architect.
- 5.2.3 In that context I would expect the Design and Build contractor when examining such drawings and specifications as were prepared by Studio E to raise any queries it felt appropriate based on its past experience, and to draw the attention of the architect to any errors or omissions or other matters that the Design and Build contractor considered as warranting attention.
- 5.2.4 I have found little evidence that Rydon carried out such a careful examination of the work of either Studio E or Harley, or raised any such points of query.
- 5.2.5 Whilst this does not in my opinion diminish Studio E's responsibility for the shortfalls that I have identified in its own work, I am surprised that Rydon did not routinely spot many of the serious omissions and errors contained in the drawings. Examples in this respect would be Studio E's submission to Building Control of drawings which showed zinc cladding, as discussed at Paragraph 5.4.32 and illustrated at Figure 5.47 of my report, and at Paragraph 5.4.68 and Figures 5.68 and 5.69 where ACM and zinc cladding are shown respectively on Harley and Studio E drawings. Again, without seeking to in any way diminish Studio E's responsibility for such inexplicable and serious errors, I would expect a Design and Build contractor to spot and complain about such errors, and thereafter in the absence of any plausible explanation, probably to insist on a major quality review of drawing quality across the project.

5.3 Paragraph 48

- 5.3.1 I infer from this paragraph that Rydon's position is that Design and Build contractors do not usually make suggestions with respect to alternative proposals for materials, components and systems of construction to those incorporated within an Employer's Requirements document as issued for competitive tender or tender negotiation. This will be a matter for evidence, but it does not accord with my experience, nor does it appear properly to represent the circumstances that pertained to the 2012-16 Works.
- 5.3.2 My own experience is that it is common for Design and Build contractors to suggest alternative construction methods, materials, and even design arrangements, especially when efforts are being made to reduce building costs.
- 5.3.3 Indeed, notwithstanding Rydon's assertion in this paragraph that '*a reasonable D&B contractor would not be expected to challenge materials specified in the Employer's Requirements*', my understanding is that it was at the behest of Rydon during pre-tender discussions that the Reynobond rainscreen system was incorporated amongst a series of alternate options that the Design and Build contractor was invited to tender upon (see paragraph 4.3.27 of my report).
- 5.3.4 In this respect I also understand, and consider it relevant, that Rydon had presented itself at tender stage as a contractor with particular experience in projects similar to Grenfell Tower, including in particular the over-cladding of high-rise residential buildings. For example, Rydon's tender submission contained the CVs of several senior Rydon employees that made specific reference to Rydon's work on the Ferrier Point and Chalcot's Estate projects (see {RYD00094244/31} and following). As Mr Sounes described at paragraph 29 of his Witness Statement {SEA00014273/13}:

'I understood (Rydon) to have a specialty in refurbishing affordable housing, including high-rise residential towers'.

- 5.3.5 Following its appointment as Design and Build contractor for Grenfell Tower, I further understand that Rydon took an active role in value engineering exercises, parts of which ultimately led to the confirmation and adoption of the Reynobond Cassette System of rainscreen cladding. I quote in this respect from Paragraph 53 of Mr Sounes's Witness Statement:

'Soon after the appointment of Rydon, Artelia sought advice from IBI regarding Rydon's proposed value engineering proposals: These included:

53.1 Face-fixed aluminium cladding...'

And at Paragraph 55:

'There were ongoing conversations during this period but ultimately the agreed changes were:

55.1 *Cladding generally: the submission (to the Planning Authority) on behalf of Rydon was for face-fixed ACM, Reynobond... ' (my parenthesis)*

5.3.6 I also note that at paragraph 53.1 of his Witness Statement Mr Sounes states:

'I knew Harley were Rydon's preferred sub-contractor...'

5.3.7 Further indication of Rydon's pro-active role in such discussions is found at Paragraph 373 of Mr Sounes' Witness Statement:

'Rydon are proposing a face fixed Aluminium cladding system...'

5.3.8 None of the above detracts from the views I have expressed in my report, and earlier within this Supplemental Report, where I comment on Studio E's Opening Statement, with respect to Studio E's performance and responsibilities. I do however consider it important that Rydon's substantial and active participation in dialogue around the choice of rainscreen cladding systems is properly reported to the Inquiry.

5.4 Paragraph 53

5.4.1 I do not challenge Rydon's general commentary (as set out in the first two sentences of this paragraph) with respect to the normally accepted roles of a Design and Build contractor and the architect in connection with coordination of the design process, by which I mean: ensuring that the contributions made to the design by the various team members are properly thought through in the context of the whole, and that those various contributions are in each case capable of integration into the whole without clashes, and in a manner that is complementary across the disciplines.

5.4.2 However, the reference point for determining the validity of Rydon's assertion at the third sentence of paragraph 53 is the Deed of Appointment {RYD00094228}. The Deed of Appointment was prepared by Rydon and described the scope and standard of the services Studio E was required to provide post-novation.

5.4.3 The view, as expressed by Rydon in the third sentence of this paragraph, that *'The architect is responsible for coordinating the whole of actual design'* is clearly supported by the following clauses from the Schedule of Architectural Services as contained within the Deed of Appointment:

'Paragraph 8: Seek to ensure that all designs comply with the relevant Statutory Requirements, including Scheme Development Standards.'

'Paragraph 10: Liaise with and co-ordinate as required to ensure compatibility with Structural Engineers, Civil Engineering, Mechanical and Electrical Engineering and Services Information and generally to ensure the overall viability of the project'.

'Paragraph 12: With other Consultants, where appointed, develop the scheme designs, agree with the Contractor the type of construction and quality selection of materials'.

'Paragraph 13: Co-ordinate any design work done by consultants, specialist contractors, subcontractors and suppliers'.

'Paragraph 15: Liaise with the various Statutory Bodies as required inter alia, Fire Authorities, Environmental Authorities'.

'Paragraph 17: Attend design co-ordination meetings as reasonably required and liaise with the design team as appropriate, both during the design process and construction period'.

'Paragraph 24: Provide information to discuss proposals with and incorporate input of other consultants into scheme design and detailed proposals'.

'Paragraph 27: Examine Subcontractors' and Suppliers' drawings and details, with particular reference to tolerances and dimensional co-ordination, finish, durability, appearance and performance criteria and report to The Contractor'.

'Paragraph 33: Liaise with Engineer and indicate movement joint locations on general arrangement drawings...'

'Paragraph 34: Provide dimensional advice and comment on lintel designs / schedules.

'Paragraph 35: Provide dimensional advice and comment on precast floor manufacturers' layouts'.

'Paragraph 36: Provide dimensional advice and comment on precast staircase manufacturers' design'.

'Paragraph 37: Liaise with the Engineer and provide general arrangement drawings of timber floors, giving details of joist layout, sizes, support trimmers, metal straps and joist hangers...'

'Paragraph 44: Liaise with The Contractor/Client and Civil Engineer in order to determine the external signage requirements....'

5.5 Paragraph 62

- 5.5.1 I agree with Rydon's assertion that a Design and Build contractor such as Rydon would not be expected to *'employ a fire engineer at the tender stage to look for problems with the base design and specification'*. However, it should not be inferred from that observation that I believe that this view extends to the period after the Design and Build contractor has been appointed to deliver the project.

5.6 Paragraph 63

- 5.6.1 I stated at paragraph 4.4.22 of my report that: *'I am critical of Rydon for presiding over this wholly inadequate situation.'* i.e. the failure to take on Exova as specialist fire consultant or alternatively appoint another appropriately qualified fire consultant. Rydon's response in paragraph 63 totally misses the point of that criticism.

- 5.6.2 I note that on 5 February 2013, Mr Sounes emailed Mr Dawson of Artelia (SEA00007318) stating:

'We believe the following will need to be included in the post-notation team

- Fire Consultant'.*

- 5.6.3 Mr Sounes says at paragraph 372 of his witness statement that {SEA00014273/372} that:

*'Around this time (March 2014) I believe I asked Simon Lawrence whether Rydon would extend Exova's appointment or appoint another fire consultant. Simon said that Rydon typically did not engage fire consultants on the basis that the strategy was established by the client's team and, as contractor, it was responsible for executing it. He regarded it as **Building Control's responsibility to raise any concerns and satisfy themselves with the details of the submission**' (my emphasis).*

- 5.6.4 It appears that it was the intention, up to at least September 2014, to appoint a fire consultant post-novation. I note the Progress Meeting Minutes dated 16 September 2014 which record {RYD00018299/2}:

'SL (Simon Lawrence) to appoint other consultants (include fire, DDA, acoustic, etc.) after the main sub-contractors are on board' (first parenthesis is mine).

- 5.6.5 Ultimately Rydon did not appoint Exova or an alternative fire consultant post-novation. It will be a matter of evidence as to why Rydon made no such arrangement with Exova or any other specialist fire consultant.

5.6.6 My own firm's experience is that the Design and Build contractors with whom we work post-novation are usually insistent on the appointment of a specialist Fire Consultant.

5.6.7 I do not understand Rydon's second sentence. My opinion remains that Rydon should have:

- a) Appointed a specialist fire consultant in timely manner; and
- b) Ensured that a proper review was carried out of the information as contained within the Employer's Requirements. Any issues and /or omissions found to be outstanding from the work that had been carried out up to the point of Rydon assuming responsibility of the project as Design and Build contractor (that is all the work otherwise required to have been performed up to and including the end of RIBA Work Stage F1) should then have been put in hand. Such a review, if properly carried out, would have identified that the Exova qualification to the effect that *'Compliance with B4 (external fire spread) will be confirmed by an analysis in a future issue of this report'* had never been resolved.

5.7 Paragraph 66

5.7.1 I stand by this comment. Indeed, Rydon's response at the second sentence onwards of Paragraph 63 of its Opening Statement merely reinforces my opinion in this respect.

5.8 Paragraph 72

5.8.1 I agree with this point.

5.9 Paragraph 73

5.9.1 I agree with this point. Indeed, this duty is made clear at Paragraphs 7 and 8 of the Schedule of Services as contained within the Rydon Deed of Appointment under which Studio E was engaged.

'Paragraph 7: Responsibility for coordinating Building Regulation Building Regulation approval for and on behalf of the Contractor'.

'Paragraph 8: Seek to ensure that all designs comply with the relevant Statutory Requirements, including Scheme Development Standards.'

5.9.2 These paragraphs deal, respectively, with the responsibility for 'coordinating' the Building regulations submission and ensuring compliance of all designs. I interpret them to mean that the information produced by the design team should be:

- a) *coordinated*: that is assembled, complementary in the overall consistency of its content, and issued on a staged basis in timely manner; and
- b) *compliant*: which I interpret to mean that Studio E were under duty to ensure that its own work, and as far as reasonably possible the work of others including Harley, was compliant with Building Regulations, all other relevant codes and standards, and in terms of general standards, compliant with the Employer's Requirements as set out in the contract between KCTMO and Rydon.

5.9.3 However, I consider it to have been the responsibility of Rydon to monitor this work and in particular to ensure that such staged submissions were made and thereafter processed by Building Control in timely manner. This, in my opinion, Rydon failed to do.

5.10 Paragraph 74

5.10.1 I agree with this paragraph. However, for the reasons set out in Section 5 of my report I remain of the opinion that Rydon failed in this respect.

5.11 Paragraph 75

5.11.1 I agree with the first two sentences of this paragraph. However, as set out at Paragraph 5.1.26 of my report, the staged submissions to Building Control were neither adequate in terms of their completeness or their timing. In this respect I draw particular attention to item b) of Paragraph 5.1.26.

5.11.2 In my opinion, a competent and responsible Design and Build contractor should have been alerted to these deficiencies by its own review and checking monitoring protocols, rather than relying on Building Control to alert it to any such deficiencies. Such a passive role is inconsistent with the responsibilities of design and build contracting.

5.12 Paragraphs 76 to 78

5.12.1 I deal with the issue of 'managing the (Building Regulations) application process' at Paragraphs 5.1.27 to 5.1.34 of my report.

5.12.2 I note that Rydon acknowledges at Paragraph 77 that *'it is useful for a tracker tool to be produced once the Full Plans Application has been made'*.

- 5.12.3 It is, contrary to the suggestion of Rydon at Paragraph 77, not the experience of my office that *'if thought necessary the architect would produce it'*. Our experience is that 'trackers' are usually routinely prepared and managed by Building Control. I agree, however, that in circumstances where Building Control do not set up a tracker, and cannot be persuaded so to do, the architect or Design and Build contractor should set up its own, as stated in Paragraph 5.1.34 of my report.
- 5.12.4 I remain critical of Building Control, Studio E and Rydon that a tracker was not set up as a 'tool' for managing the staged approval process for the 2012-16 Works. The scale and complexity of the project, the procurement route adopted (Design and Build), and the staged nature of the submissions which, although not particular to Design and Build contracting, is an almost inevitable consequence of that procurement route, in my view, made a 'tracker' essential.
- 5.12.5 Curiously, at paragraph 78, whilst stating that the use of a 'tracker' is not mandatory (which I accept is correct), Rydon states that a tracker does not *'guarantee clarity or conformity'*. The use of the word 'conformity' may indicate a misunderstanding of the function of a tracker: it will not assist in ensuring compliance with Building Regulations or the guidance contained in the Approved Documents in terms of the information provided (if that is what is meant by Rydon's use of that word in this context). Rather, it merely records what has been provided and what stage of progress on the route to eventual sign-off each part of the application has reached. I refer the Reader to the 'Contents' list at Paragraph 5.1.34 of my report and to Figures 5.1, 5.2 and 5.3, which show the process in action.
- 5.12.6 I accept Rydon's comment at the first sentence of paragraph 78 *'The lack of a formal tracker does not necessarily mean that the process is not being monitored in one form or another'*.
- 5.12.7 It will be a matter of evidence as to what system or protocol (in lieu of a tracker) was used and why the adopted method was so ineffective. And it will be for the Inquiry to determine the level of responsibility that Rydon carry for that failure.
- 5.12.8 With respect to Rydon comments at the last sentence of Paragraph 78 that *'If Studio E thought it necessary to create and maintain a tracker in order to discharge its obligation to RML... it ought to have done so'*. Whilst I agree that Studio E should have addressed such failure on the part of Building Control in this way, I consider that Rydon should have maintained a sufficiently 'hands on role' to recognise that:
- a) no tracker had been set up; and
 - b) the shambolic staged delivery of the application to Building Control (as described in detail within Section 5 of my report) needed to be brought under control.

- 5.12.9 In my opinion, a competent and responsible Design Build contractor would have acted to achieve that outcome by insisting, at a very early stage in the application process, that a tracker was set up, and was thereafter used by the Design and Build team to manage and coordinate its rolling submission programme.

5.13 Paragraph 79

- 5.13.1 It is the experience of my office that all Design Build contractors set up a Design Responsibility Matrix. I deal with this at Paragraphs 5.1.35 to 5.1.39 of my report.
- 5.13.2 In the first sentence of paragraph 79, Rydon states that *'such matrices can leave key points of detail unclear'*. I agree with this point. It is an extremely complex process on even a small project to ensure the provision of all information as necessary to confirm a design, submit it for necessary statutory consents, secure tenders, order all required materials and components, and to confirm their exact positioning and assembly within the building.
- 5.13.3 The adoption of modern manufactured components prepared off-site (as opposed to traditional materials and components, which can be 'crafted', cut, shaped and 'worked' into position on site) makes the task of producing construction documentation particularly complex (see Paragraph 2.10.27 of my report).
- 5.13.4 This is made all the more challenging under modern procurement methods whereby building contractors pass very large parts, if not all, of the work to sub-contractors.
- 5.13.5 In such circumstances, it is the interface between the various sub-contractors' work that becomes so critical. A Design and Build contractor should ensure that all components and all work as necessary to complete a project have been properly identified as soon as possible. Thereafter, it is of great importance for it to ensure that responsibilities in those respects have been properly allocated in a timely manner so as to ensure timely delivery to site of components and of labour with the requisite skills to ensure the speedy and efficient processes of construction. Failure to do so will have the most severe consequences. This is why the adoption and effective operation of a matrix of responsibilities is so important.
- 5.13.6 I do not understand why, in the third sentence of paragraph 79 Rydon suggest that *'Had such a document been prepared, Studio E would have been assigned responsibility for design and building regulation approvals with input from Harley and others'*. This is to entirely miss the point of a Design Responsibility Matrix.

- 5.13.7 I fail to understand the point being made, or indeed the logic, of Rydon's final sentence of Paragraph 79.

6 Harley Facades Ltd – Response to Opening Statement

6.1 Introduction

- 6.1.1 In this section I respond to Harley Facades Ltd.'s Opening Statement. It addresses the items contained therein which warrant further commentary or explanation with respect to my position as set out in my report. For ease of referencing I use the same paragraph numbering as Harley.

6.2 Paragraphs 4 and 6

- 6.2.1 I note that Harley had an 'in-house' design resource, and that it also used a 'sub-contractor', Bespoke Designs, to 'translate' Studio E's designs into 'working drawings'.
- 6.2.2 The importance of Harley's involvement, in terms of developing the detailed design and producing production drawings for the purposes of both off-site fabrication and on-site assembly, was considerable.
- 6.2.3 Harley subcontracted the detailed design of the façade to Bespoke Designs. I understand that the majority of the design and production drawings were either authored by Mr Kevin Lamb of Bespoke Designs, or that Mr Lamb provided input to those drawings. Mr Harris of Harley informed Mr Lawrence of Rydon that the lead designer of the façade would be Mr Daniel Anketell-Jones of Harley {HAR00005406} and Mr Anketell-Jones accepts in his witness statement at paragraph 14 that he had some management responsibility over Mr Lamb {HAR00010149/3}. The quotation provided by Mr Lamb to Mr Anketell-Jones for design services dated 12 August 2014 required that *'all information as supplied by Bespoke Design in good faith, should be checked for errors and general conformity'*. I understand therefore that Harley had supervisory responsibility over Mr Lamb's output at all times.
- 6.2.4 The standard of the information produced by Mr Lamb that I have seen appears to be high in terms of its clarity, dimensional coordination, and scope.
- 6.2.5 I am concerned however that Harley did not properly understand the requirements that the work that it was producing (in terms of detailed design arrangements) would have to satisfy in relation to the Building Regulations and in particular the guidance in ADB2.
- 6.2.6 I will comment on this matter on various occasions herein, but the key point is that we operate within a construction industry that passes much in the way of responsibility (in this case that of compliance of detailed design with Building Regulations) 'downstream' or variously to 'others'.

- 6.2.7 I think that it is incumbent on those who pass on such responsibility to make sure that those who are charged with the tasks involved are adequately trained, briefed and monitored in order to ensure that the work is carried out to appropriate standards.
- 6.2.8 I suspect that irrespective of however well-intended Harley was as a company, and its team and sub-contractor members were as individuals, the Harley team (both in-house and sub-contractors) did not carry the knowledge and training that would be necessary to properly discharge its duties in a manner that was compliant with the Building Regulations and the guidance contained within ADB2. This conclusion is based both on the information that was produced and the commentaries of various Harley personnel witness statements and its Opening Statement.
- 6.2.9 This is a matter which should have been of concern to Rydon, Studio E and Harley and should have led to great care being applied to the processes of briefing and checking in relation to the information produced on behalf of Harley.
- 6.2.10 It will no doubt be a matter of interest for the Inquiry to establish what kind of knowledge, experience and training those who carried out that work for and on behalf of Harley had.
- 6.2.11 A wider question that follows is what kind of safeguards the construction industry has in place to ensure that such critically important work is carried out by persons who have been properly trained to assume such responsibilities, and are properly regulated in terms of the services that they provide.
- 6.2.12 In parallel with the concerns as listed above, it is evident from the information that I have seen, as recounted in Sections 4 and 5 of my report, that Studio E's information as issued to Harley fell well short of what should have been provided under both its KCTMO appointment (Work Stages A to F1 but particularly E and F1) and in terms of Studio E's responsibilities under its post novation Rydon appointment.
- 6.2.13 The consequence of this was that with respect to the entire over cladding works (with the exception of the window linings and the insulation/packing that they concealed) Harley and its sub-contractor, Bespoke Designs, effectively assumed responsibility for producing substantial parts of what is normally classed as RIBA Work Stages E, F1 and F2 information as well as that part of Work Stage K that related to the provision of further information as required by the Design and Build contract.
- 6.2.14 A similar issue pertains to the routine checking of Harley's drawing work: Studio E have made it clear that it saw its role as one of merely checking with respect to architectural intent (see for example Neil Crawford's Witness Statement at paragraph 55 {SEA00014275/23}).

- 6.2.15 The extent to which design drawings and information produced by or on behalf of Harley was checked by Harley or the wider Design and Build team for errors and compliance with the Building Regulations and approved guidance, if at all, will be a matter for further evidence.
- 6.2.16 Again, a wider question that follows is what kind of safeguards the construction industry has in place to ensure that such critically important work is checked by persons who have been properly trained, possess the appropriate knowledge and experience to assume such responsibilities, and are properly regulated in terms of the services that they provide.
- 6.2.17 In making these comments I am aware that many Design and Build contractors operate with very high standards of care; likewise, the architects and other consultants that work for such Design and Build contractors. The Harley Opening Statement nevertheless lays bare some serious issues of protocol in the circumstances pertaining to the 2012-16 Works which I suggest have wider implications that will require review elsewhere.

6.3 Paragraphs 20 and 21

- 6.3.1 I am concerned that at paragraph 20 Harley is over stating my position, as set out in paragraph 3.8.6 of my report.
- 6.3.2 Whilst I remain firmly of the opinion that the main *'principles of the design arrangements and materials specification in terms of assembly and code compliance* (should be) *properly worked out*' prior to the issue of a Design and Build tender package, it is inevitable that some lesser matters relating to Building Regulations compliance will frequently be left for later resolution after the appointment of the Design and Build contractor.
- 6.3.3 The amount that is left for later resolution depends of course on the point at which the Employer's Requirements are issued to tender (see paragraph 2.2.14 et seq of this Supplemental Report, Part 1).
- 6.3.4 Those qualifications aside, I agree with Harley's implied suggestion at paragraph 20 that it was *'entitled to proceed on the basis that... when compiling the NBS for the Project'* Studio E's work, as provided under the Employer's Requirements, was compliant with the requirements of the Building Regulations and the guidance contained within ADB2.
- 6.3.5 I also accept Harley's suggestion at the penultimate sentence of paragraph 21 that:

'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.'

- 6.3.6 It seems to me that this does not, however, remove Harley's own responsibility for ensuring that the work it produced in the development of the Studio E design was compliant with the relevant Building Regulations and approved guidance.

6.4 Paragraph 27

- 6.4.1 The final sentence of this paragraph indicates a disturbing apparent misunderstanding on the part of Harley with respect to the proper application of ADB2, paragraph 9.3 and Diagram 33.
- 6.4.2 The comment *'However, in later revisions of its drawings, Harley did include a cavity barrier above the window, broadly in line with Studio E's drawing'* fails to recognise, even now, that the purpose of the cavity barriers around openings is to *'close the edges of cavities'* (ADB2 paragraph 9.3) in order to *'inhibit'* the passage of fire into cavities, and in circumstance where fire exists within a cavity, to *'inhibit'* the further passage of fire, smoke and hot gases back out of the cavity at the positions of those openings.
- 6.4.3 Figure 4.83 of my report shows Harley drawing C1059-301-E. Comparison with Studio E's drawing 1279 (06) 110 00 at Figure 4.49 of my report shows that the positions of the respective horizontal cavity barriers over the window are very different.
- 6.4.4 The Harley cavity barrier is positioned a significant way up the cavity void. Insulation is shown below the cavity barrier which, in the case of Grenfell Tower, had serious consequences because the insulation was Celotex RS5000 or in limited instances Kingspan K15, neither of which met the standard of 'limited combustibility' as required for compliance with paragraph 12.7 of ADB2. Such insulation thus provided a source of fuel that would further facilitate the spread of fire entering the cavity at its perimeter.
- 6.4.5 In contrast, Studio E's drawings, as illustrated at Figure 4.49, showed a cavity barrier arrangement that closed the cavities at the very edge of the openings formed at the head of the windows and were thus compliant with the guidance of ADB2 in this respect (although cavity barriers were not shown at the sill and jamb positions of the windows).

6.5 Paragraph 28

- 6.5.1 I recognise Mr Anketell-Jones' responsible efforts to secure a clear resolution of this problem that was compliant with the guidance in ADB2 and the requirements of the Building Regulations.

- 6.5.2 However, the account of his actions (as revealed for example by the email exchange exhibited at paragraph 4.4.36 of my report and subsequently commented upon under paragraphs 4.4.41; 64; 112; and 113b of my report) simply serves to underline the question raised by me earlier in my response to this Opening Statement: what kind of safeguards does the construction industry have in place to ensure that such critically important work is carried out by persons who have been properly trained to assume such responsibilities, and are properly regulated in terms of the services that they provide?
- 6.5.3 This comment is not restricted to Harley, but is particularly relevant to Harley and to other sub-contractors who take on significant parts of the work of design and the preparation of production information that is complex and would normally be carried out by persons who are properly trained and qualified to undertake the task. Those who are properly trained and qualified to carry out the task are normally accountable to some form of independent regulatory procedure for the work that they carry out, and for the regulated ongoing CPD that is intended to keep them abreast of developments within the construction industry that are relevant to their field of work.

6.6 Paragraph 31

- 6.6.1 It will be for the Inquiry to determine whether it was indeed 'reasonable' for Harley to assume that a 'Class 0' insulation product met the guidance of ADB 2 at paragraph 12.7 which called for 'limited combustibility'.
- 6.6.2 This issue again takes us back to the point made in the preceding paragraph about what safeguards are necessary within the construction industry.
- 6.6.3 It also raises again issues about the confusing application of standards relating to fire properties of materials and components as contained within the guidance provided in ADB2.

6.7 Paragraphs 33 to 38

- 6.7.1 This paragraph provides a useful summary of the inspection protocols adopted by Mr Bailey on behalf of Harley. It will be for the Inquiry to determine precisely what checks Mr Bailey carried out.
- 6.7.2 However, any such checking clearly was not adequate and poor workmanship has been reported by Dr Lane as acknowledged at paragraphs 34 and 38 of Harley's Opening Statement.

- 6.7.3 In this respect Harley, at paragraph 37 of its Opening Statement, has had the grace to acknowledge 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'*.
- 6.7.4 However, it is my belief that whilst the construction industry has layers of checking protocols, a regime of checking cannot in itself suffice however regularly and thoroughly carried out it is. Whilst I do not wish to in any way challenge the importance of inspection, it is of critical importance that those who undertake those inspections understand what they are checking.
- 6.7.5 This brings me back to the point made in the paragraphs above about the importance of persons being appointed to such roles who have been properly trained to assume such responsibilities, and are properly regulated in terms of the services that they provide.

6.8 Paragraphs 40 and 41

- 6.8.1 Harley claim here that it *'(relied) on Building Control in relation to compliance with the Building Regulations and ADB'*.
- 6.8.2 In my opinion an architect cannot transfer responsibility for ensuring compliance of their work with the requirements of Building Regulations or the guidance in the Approved Documents to Building Control.
- 6.8.3 I note in Law in Practice, The RIBA Legal Handbook 2013, 2nd edition, which was available at the time of Harley's involvement with the 2012 – 2016 Works, that the RIBA make clear that *'the architect may produce design documentation that is approved by the building control service, but the architect must still comply with the requirements of the Building Regulations themselves and not rely solely on this approval'* (paragraph 7.5.1, page 185) {INQ00013967}.
- 6.8.4 The guidance quoted above makes explicit reference to the 'architect'. However, I believe that this guidance applies equally to Harley, and indeed to any other party carrying out design work that is required to meet the requirements of the Building Regulations.
- 6.8.5 Accordingly, I conclude that Harley is wrong to assume that it could *'rely on Building Regulation Control in relation to (ensuring) compliance with the Building Regulations'*.
- 6.8.6 It is my opinion that Harley should therefore have ensured that it employed staff and sub-consultants that were appropriately trained and qualified and could be relied upon to carry out design work that was compliant with the statutory requirements.

6.9 Paragraph 44

- 6.9.1 In my response to Studio E's Appendix to its Opening Statement (see Part 2 of this Supplemental Report) as it relates to paragraphs 2.6.1 to 2.6.21 of my report, I comment as follows when referring to the gaps between the new window frames and the surrounding concrete structure which, due to the revised location of the replacement windows, was much larger than the gaps between the originally installed windows and their surrounding structure:

'Following the 2012-16 Works those much larger gaps were not only unprotected in terms of packing/sealing with material of limited combustibility, they also provided a passage for fire into the cavity formed 'behind the rainscreen system'.

- 6.9.2 I do not accept the view, as expressed in the second sentence of this paragraph of Harley's Opening Statement, 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 materials'

I accept that this comment may apply with respect to installation non-conformities, but I do not accept that it applies to 'detailing' for the reasons that I set out below.

- 6.9.3 At paragraph 2.11.4 of my response to Studio E's Opening Statement (see Part 1 of this Supplemental Report) I state:

'Although it is a matter for the fire specialists appointed to the Inquiry to determine, it is possible that had the cavity barriers been designed and specified, and thereafter installed in accordance with ADB2 particularly around the windows, the fire may not have got into the cavity in the first place'.

- 6.9.4 These gaps around the window frames were consequent upon the poor design and detailing that is evident on both the Studio E and Harley drawings.

- 6.9.5 At Figure 4.64 of my report I exhibit Studio E drawing 1279 (06) 110 00 which shows a horizontal cavity barrier immediately to the head of the window (which complies with the guidance of ADB2), but no cavity barrier to the sill, which therefore fails to comply with the guidance in ADB2.

- 6.9.6 At Figure 4.79 of my report I exhibit Studio E drawing 1279 (06) 110 00 which shows a vertical cavity barrier which is noted as *'in line with compartment wall'*. This would appear to comply with the requirements of ADB2 Diagram 33 which, albeit far from clear, shows a horizontal cavity barrier in line with compartment floors. From this, it is generally inferred (albeit there is no equivalent Diagram 33 plan showing such) that a vertical cavity barrier should correspondingly be placed at compartment wall positions. The cavity barrier so shown on Studio E's drawing as illustrated at Figure 4.79 meets that guidance. It does not however meet the guidance in ADB2 paragraph 9.3 which calls for *'Cavity barriers to be provided to close the edges of cavities, including around openings'*.
- 6.9.7 I have highlighted on Figure 4.79 of my report what may have been intended to represent cavity barriers positioned at the jambs of the windows.
- 6.9.8 Harley, who in my opinion as I have stated earlier herein had a right to rely upon Studio E's design for the further development of the design that it would carry out, were therefore provided through the work of Studio E with a clear indication that a cavity barrier was required immediately to the head of each window, but not to the sill (Figure 4.64) and possibly to the jambs (Figure 4.79).
- 6.9.9 Faced with that design information, Harley chose to relocate the cavity barrier to the window head in a position that *may* have satisfied the requirement for a horizontal cavity barrier to the compartment floor (see paragraph 4.4.99 of my report), but which did not meet the separate requirements of ADB2 paragraph 9.3 which calls for *'Cavity barriers to be provided to close the edges of cavities, including around openings'*. By way of example this is shown on Harley drawing C1059-301-E exhibited at Figure 4.83 of my report.
- 6.9.10 Harley also chose (if they so noted it) to ignore the suggestion (if that is indeed the correct interpretation which will be a matter for evidence) as shown on Studio E's drawing (as exhibited at Figure 4.79 of my report) that cavity barriers were required to close the cavities around openings at the window jambs.
- 6.9.11 As previously stated, I do not believe that Studio E was entitled to rely upon Harley to check and correct Studio E's work as it developed the design.
- 6.9.12 As stated elsewhere, it is my view that Studio E had a duty under its appointment to Rydon to check Harley's drawings for compliance with the Building Regulations, the guidance in ADB2, and the proper application of the principles shown within Studio E's drawings as contained within the Employer's Requirements and as developed by Studio E thereafter. It will be a matter for the Inquiry to determine what level of responsibility Harley assumed for:

- a) Departing from the ADB2 guidance compliant arrangement that Studio E showed for the window head (Figures 4.64 (Studio E) and 4.83 (Harley)) and in this respect failing to meet the guidance in ADB2.
- b) Failing to properly explore and establish the intent of the hatched component shown, but not described, at the jambs on Studio E's drawing (Figure 4.79), and in this respect failing to meet the guidance in ADB2.

6.10 Paragraph 49

- 6.10.1 The commentary within this paragraph of Harley's Opening Statement is not wholly accurate.
- 6.10.2 It is incorrect to say that no cavity barriers *'featured (around the windows) in the cladding design drawings of Studio E'*. In this respect I refer the Reader to my commentary at paragraph 6.9 above.

6.11 Paragraph 50

- 6.11.1 Again, this paragraph indicates a disturbing apparent misunderstanding on the part of Harley, even now, with respect to the proper application of ADB2 paragraph 9.3 and Diagram 33.
- 6.11.2 Mr Bailey is reported to have surmised that:

'the omission of cavity barriers may have occurred... 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'.

- 6.11.3 This view fails to take in the advice of ADB2 at paragraph 9.1 which I quote as follows:

*'Concealed spaces or cavities in the construction of a building provide a ready route for smoke and flame spread. This is particularly so in the case of voids in, above and below the construction of a building, e.g. **walls**, floors ceilings and roofs (my emboldening). As any spread is concealed, it presents a greater danger than would a more obvious weakness in the fabric of the building.'*

6.11.4 It is in any event (as stated at my response to Studio E's Appendix to its Opening statement at paragraphs 3.7.20 to 23, see Part 2 of this Supplemental Report) not for a designer (architect or otherwise) to unilaterally determine that the guidance in ADB2 should be ignored in circumstances where it is considered to be surplus to requirements.

6.11.5 Again, this raises questions about the training and experience of the staff at Harley in relation to the responsibilities that the firm had undertaken.

6.12 Paragraphs 51 and 52

6.12.1 As I have stated at paragraphs 3.7.20 to 3.7.23 of my response to the Appendix to Studio E's Opening Statement:

'With reference to Studio E's final comment to the effect that it would not have been practical to fix cavity barriers 'at the tip of the "diamond shaped" columns' (by which I believe it is referring to the arrangement shown for my Indicative Scheme example at Figure 3.50), that is not a reason to pursue an arrangement, as indeed Studio E did, which does not meet the Building Regulations nor comply with the guidance in ADB2'.

6.12.2 This comment applies equally to circumstances where a designer may think it difficult or impractical to resolve a detail for closing a cavity around a window that is consequent on unusual or complex geometries, or indeed any other design situation.

6.12.3 All such design challenges have to be solved in a manner compliant with the requirements of the Building Regulations, and if that is not possible, other design arrangements must be adopted as an alternative.

6.12.4 This comment applies equally to Harley and all others responsible for the design of the 2012-16 Works.

6.13 Paragraph 54

6.13.1 As commented upon elsewhere, I agree that Diagram 33 should be the subject of criticism in terms of both its intent and its clarity.