Grenfell Tower Inquiry

Paul Hyett, HKS Architects Ltd

Supplemental Report

Part 2

2.13 APPENDIX TO STUDIO E OPENING STATEMENT: HYETT RESPONSE

Note: Where I refer the reader to one of the themes listed A-K, those are the themes which form my main response to Studio E's Opening Statement (see Part 1 of this Supplemental Report).

Paragraph	Comment
	Executive Summary
1	The over-cladding works comprised some 40% of the total construction costs of the 2012-16 Works. It was certainly a significant part of the overall project. I accept (and have always been aware) that there were other complex aspects to the project which demanded significant input on the part of Studio E. I have, however, focused the main part of my attention on the over-cladding from floor 4 upwards as the design and construction of these parts was the major contributor to the spread of the fire on the night of 14 June 2017. Lest it be inferred otherwise, the fact that there were other complex and/or substantial parts of the project to deal with concurrently with the over-cladding works does not in any way lessen the duty of care that was due on the part of Studio E in terms of maintaining a standard of service in relation to the over-cladding work that was consistent with its contractual obligations and the standard of service expected of an architect exercising reasonable care and skill. (See also paragraphs 2.4.29 and 2.5.4 of my Supplemental Report).
2	Please refer to Themes A and B.
3	Please refer to Theme C.
5 & 6	Please refer to Themes E, F and G.
7	Please refer to Theme J.
10	I note and, having checked, accept the point that the quotation that I used related to smoke ventilation proposals. I have re-read both references to the witness statements of Mr Sounes and Mr Crawford. Nevertheless, it remains my opinion that '*the Building Regulation application process remained in a serious state of disorder throughout the life of the project*'. Mr Crawford's comment at paragraph 206 of his witness statement {SEA00014275/65} does not cause me to divert from my opinion that Studio E's coordination of the application process was poor, and the services provided inadequate.
11 & 12	Please refer to Themes A and B. Paragraph 4.4.72, Figure 4.7.2, bullet point 3 of my report makes clear that the contractor's responsibility (with respect to 'Design of Rainscreen Generally') is to *'complete the design in accordance with the designated code of practice to satisfy*

	specified performance criteria'. A clear indication of the kind of detailed design work expected of a specialist sub-contractor in this respect is given under the first bullet point: *'Design responsibility: Determine sizes and thickness of panels and types, sizes and numbers of fixings to suit backing wall and the layout and details of supporting steelwork'*. This is entirely consistent with my experience of the work typically expected under a sub-contractor's design responsibility for a package of this kind; that is, detailed design building on the principal design work of the architect. In this respect, unless during the development of the sub-contractor's design work it is formally agreed to vary the principles of the architect's design, the sub-contractor is required to develop that design and the architect retains responsibility for his/her work.
13	The Inquiry will draw its own conclusions as to the characterisation of Studio E's management and delivery of the project. My own view is that the project was run and delivered in a chaotic manner and I maintain that view. I also maintain my comments and conclusions regarding the 'as-built' information.
14	Please refer to Themes E and F.
	Section 1
1.2.4	Please refer to Themes E and F. I have listed within my Report and Supplemental Report the regulations, legislation and guidance that I have considered, and I have applied my experience with respect to industry practice in so doing. In circumstances where the Inquiry directs me to consider information beyond that already listed, I will respond accordingly.
1.3.2 and 1.3.3	The letter as incorporated into the Appendix of my report as dated 15 October 2018 is the correct letter. My report has been corrected with respect to the quotations taken from the letter of appointment as referred to at paragraph 1.3.3 of my report.
1.3.4 and 1.3.5	I repeat paragraphs 1.3.4 and 1.3.5 of my report. I do not consider that any issues of workmanship materially affect the conclusions that I have reached in my report.
1.3.7	In preparation of my report I noted the comments as contained within Dr Lane and Professor Torero's respective reports. The 'layers of safety' issue does not affect my findings with respect to the various failings in the design of the over-cladding to which I have referred.
1.4.5	Please refer to Theme K.
	Section 2
2.1.3 to 2.2.1	Please refer to Theme D. I read the Hackitt Report prior to being instructed as Expert to the Grenfell Inquiry.

	This did not cause me to adopt a "counsel of perfection" when evaluating Studio E's work. In fact, the Hackitt Report highlighted to me the difficulties that arise in the work of architects and those others who must use the regulatory framework in relation to their work within the construction industry. I confirm that I assessed Studio E's work by the standard of the reasonably competent architect's practice applying reasonable care and skill as at the time Studio E undertook work on Grenfell Tower.
2.1.6 and 2.1.7	I do not consider that any increased understanding of the statutory framework gained through my research for this Inquiry has inappropriately influenced the conclusions I have drawn in my report. I repeat that at all times I have assessed Studio E's work by the standard of the reasonably competent architect's practice applying reasonable care and skill as at the time Studio E undertook work on the project. It is important to note that at the point of an architect's qualification, registration and the effective right to use the title 'architect' and to practice as an 'architect', a set standard in terms of competence, capability and ethical conduct and responsibility is established. Experience beyond that initial 'milestone' stage in an architect's career can, and indeed should, improve capability. However, at this 'milestone' stage an architect should understand such basic issues as how to apply and interpret the Building Regulations and ADB2; where responsibility lies in general terms with respect to in-principal design work as carried out for Employer's Requirements documentation and sub-contractor's work thereafter; the fact of an architect's ongoing responsibility to an Employer Client, and separate responsibility (where so stated) to a Design and Build Contractor for work done pre-novation and for, in the latter case, work that will be done post-novation. I base these comments upon my current experience as a RIBA Part 3 examiner.
2.2.3 to 2.2.5	My commentary is intended to assist the Reader in understanding the 'dynamic' nature of architectural education and practice in relation to new procurement methods, new construction techniques and the impact of changes such as those in IT. This was taken into account, along with my experience of practice, and my experience in terms of standards at admission to the profession as a Part 3 Examiner, when assessing Studio E's work against the required standard of reasonable care and skill.
2.2.6 to 2.2.21	It is my belief that this contextual background information will be of assistance to the Inquiry. It is, however, for the Inquiry to determine its value.
2.3.1 to 2.3.17	I have set out my opinion on these matters above. No further comment.
2.3.11	I have set out my opinion on this matter above. No further comment.
2.3.17	I agree that all projects have budgets and for 'local-authority' funded projects it is a matter of public accountability that those budgets are complied with in all

	circumstances, except those where public safety is compromised. Similarly, I agree that it is good practice for risk to be transferred to the party '*that is best equipped to mitigate that risk'* provided that such process of transfer is both transparent and agreed. I do not agree that risk should be passed to any natural or legal persons who are not competent or sufficiently resourced to take on that risk. I believe that it is irresponsible to assume risk and responsibility has been passed to others in circumstances where this has not been expressly agreed, and where that responsibility might not be understood, and where its transfer has not been expressly and formally pre-agreed.
2.5.1 to 2.5.12	Insofar as there have been any errors in understanding the financial circumstances that prevailed at the time that Studio E changed its name and or reconstituted/re-structured its company, I do not believe this undermines the conclusions that I have reached with respect to the architect's work on this project. I will of course review this matter if directed by the Inquiry.
2.5.3	I do not believe this undermines the conclusions that I have reached with respect to the architect's work on this project.
2.5.14	I agree that seeking out and obtaining information from product manufacturers and/or suppliers may assist in expanding an architect's knowledge. I do not agree that an architect is permitted to rely on such information to the extent that it absolves the architect from satisfying themselves that those products are compliant with the Building Regulations and Approved Documents in the application proposed. Refer to Theme I.
2.6.1 to 2.6.21	It is my belief that this contextual background information will be of assistance to the Inquiry. I do understand that the overall dimensions of a window frame must be slightly smaller than the opening into which it is to fit, and that a window must be the right 'shape' to fit the opening. Figure 2.1 of my report shows that the window illustrated is smaller than the brick opening. The simple point to be understood is, as evidenced in most 20th century house construction, that the wall plaster/plasterboard returns into the window reveal and seals the gap between the window frame and the wall. I know that modern sealants inserted around window frames are not usually fire-resistant nor are they required to be. With respect to the reference to 'gaps' between the outer edges of the original aluminium window frames at Grenfell Tower (removed during the 2012-16 Works) I have no doubt that such gaps did exist and that they were variable in size. I also have no doubt that whatever gaps did exist, they were considerably smaller than those that occurred between frame and host structure following the 2012-16 Works. I do not know how such gaps were sealed at the inner face of the original window installation, that is against the inner reveal linings. These may have been filled with material of 'limited combustibility' but further investigation would be

	required to establish the facts. I question the relevance of Studio E's observation in any event. Any gaps in the original construction at the window / host structure junction led to the outer air where there was little or no risk of the consequence of the passage of any fire through such a gap. 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.
2.6.29	I recognise the additional important benefit of the fact that the location of the new windows further 'outboard' enabled the original windows to be removed after the installation of the replacement windows. Irrespective of that fact, any new over-cladding arrangement that involves thermal upgrading will seek to avoid 'cold-bridging' and in so doing will seek to ensure continuity between insulation affixed to the outer face of the original construction/structure and the newly installed insulated window frames. If those windows were to be set 'within' the reveals, then the insulation would have to 'return' into the reveals and the dimensions of the windows would have to be considerably reduced in size. I do not therefore accept Studio E's comment that the windows were repositioned further outboard '*so that they could be installed in advance of the removal of the original windows'*. This was a collateral benefit. The new windows were quite rightly installed in the position selected by Studio E in order to maintain the new thermal line, and thus avoid cold-bridging, without reducing in any material sense the size of window openings and thus the amount of day-light and view that the residents had otherwise hitherto enjoyed.
2.6.32	Please refer to Theme J.
2.6.33 (a)	Please refer to Theme F. Studio E is correct in this point which I fully understood at the time of writing my report. Paragraph 2.6.33(a) should read '*in the absence of any other route to compliance with the Building Regulations being adopted all the components…'* etc
2.6.38	I stand by my text. Furthermore, I do not accept Studio E's suggestion that cavity barriers can '*safeguard compartmentation'*. This would necessitate integration of materials that perform to a higher standard in terms of impeding the passage/spread of fire than the performance that a cavity barrier can offer. However, nothing turns on this point. The LABC (Local Authority Building Control) provides further insight into the wider role of cavity barriers with this advice which I have discovered on its website at https://www.labcwarranty.co.uk/blog/faq-cavity-barriers-in-external-walls/

	Entitled 'Why do we install cavity barriers?' it states: *'A concealed space (cavity) in the external wall of a building can act as a chimney and provide an easy route for flame, hot gases and smoke to propagate from one compartment of a building to another. Unsealed cavities can allow air to be drawn in and smoke to vent out, enabling the fire spread to accelerate through the façade. This chimney effect enables flames that are within a cavity to be able to extend between 5 and 10 times higher than a flame that is not within a cavity, regardless of whether or not the surfaces of the cavity are combustible.* *Regulation and BS 9991 require that the flame spread over or within an external wall construction should be controlled to avoid creating a route for rapid fire spread bypassing compartment floors or walls. This is an important consideration for any fire strategy but is of fundamental importance when a 'stay put' strategy is in place.* *By utilising carefully selected vertical and horizontal cavity barrier products to sub divide and compartment concealed cavities, the rapid spread of fire from one compartment to another is prevented.'* The point here is that cavity barriers should not be seen as solely a protective barrier to protect against the passage of fire (or fire spread), they should also be seen as a component that substantially seals the cavity in order to restrict the passage of air (with oxygen) which is essential to the combustion process.
2.6.48 (c)	I am indeed aware of those other issues such as '*programme and cost implications and the preferences of planners and clients particularly regarding aesthetics'* which require consideration by an architect when selecting rainscreen materials. No such considerations would ever justify a failure to comply with the Building Regulations.
2.6.48 (d)	Please refer to Theme F.
2.7	It is my belief that this contextual background information will be of assistance to the Inquiry. It is however for the Inquiry to determine its value.
2.8.9 to 2.8.19	Whilst I understand the distinction drawn by Studio E between value engineering and cost reduction, I do not understand Studio E's point here. In these paragraphs I mean to make clear that no value engineering or cost saving measure option would be justified where such action would lead to a failure to comply with the Building Regulations or compromise safety more generally. I am aware that, as with virtually every project, there was pressure to reduce costs.
2.8.18	See above. No further comment.
2.9	Within this part of my report I set out a summary explanation of the basic

	understanding that an architect should have with respect to the content and application of the Building Regulations. None of what I have set out therein is intended to imply that an architect would not recommend the appointment of a fire consultant on a project of the scale and complexity of the 2012-16 Works. Such a recommendation should be made, certainly in circumstances as with the case of Studio E where a project of this kind had not been hitherto undertaken by the practice. Regarding the reference to '*infer*' (by which I believe Studio E mean 'imply') no such implication with respect to Studio E or any other party to the 2012-16 Works was intended.
2.9.4	Please refer to Theme F.
2.9.5 to 2.9.7	I note that Studio E recommended the appointment of Exova. I noted at section 4.4.14 of my report that Rydon chose not to appoint Exova or indeed any other fire consultant under its Design and Build contract. I have criticised Rydon in this respect. Please refer to Themes E and I.
2.10.2 and 2.10.3	Please refer to Themes A and B.
2.10.5	I agree.
2.10.7	No further comment.
2.10.23	I accept this point by Studio E. I should have used the word 'administering' in lieu of 'managing'. I agree with Studio E that *'the Contractor's obligation to meet contracted standards is the same in both design and build and traditional contracting'.* Similarly, I agree with Studio E's comment about sign-off and certification, albeit with the proviso that some 'sign-off' duties may be specifically required of an architect in relation to aspects of construction inspection duties. I have no knowledge of any such requirement under the Rydon/Studio E Deed of Appointment.
2.10.24 and 2.10.25	Please refer to Theme A. I maintain my opinion as set out at paragraphs 2.10.24 and 25 of my report. I do not accept that they are inconsistent with either my conclusions that Studio E's design was insufficiently developed at tender stage or my comments about the lack of Studio E detailed drawings and design development under their appointment to Rydon. I agree that a Design and Build contractor does need Employer Client agreement to major design and specification changes and add that this becomes a more onerous restriction when the Design and Build contract is based on more advanced

	Employer's Requirements as was the case for the 2012-16 Works.
2.10.26	Please refer to Theme A. I do not accept Studio E's comments. When referring to sequencing my commentary relates to the sequencing of the architect's work, not the sequence of construction on site. I have given detailed examples of such disruption to sequencing in earlier comments within this Supplemental Report: for example, at responses 2.2.13 to 2.2.22. Although I acknowledge that Building Regulation applications are usually made following the appointment of a Design and Build contractor, the later that appointment (in terms of the work stage reached) the more advanced the work should be upon which the Building Regulations application will be made. Despite the fact that the KCTMO appointment did call for comparatively advanced work pre novation (to Work Stage F1 which should have been available upon the appointment of Rydon in a form that included a good range of typical larger scale details (1:5) to complement and indeed inform the 1:20 drawings that Studio E did provide) such information was not progressed as far as it should have been. Progress in terms of dialogue with Building Control was, at the point of issue of Employers Requirements, accordingly not as advanced as it should have been. Delays caused by the planning consent parts of Studio E's work in my opinion had no adverse impact on the progress of its technical work and had no causal effect with respect to the errors and omissions that occurred in this respect. Indeed, errors such as the choice of PIR insulation to the rainscreen cavity, failing to develop an appropriate cavity barrier strategy, and failure to specify window infill panels that met the guidance of ADB2 were unrelated to the issue of planning consent. I note that Studio E disagrees with me regarding the capacity of the Design and Build procurement route to disrupt the normal sequencing of an architect's work, but in terms of this Inquiry little if anything turns on that point. That is because, in this case, the novation was so late that Studio E was expected to produce Work Stages A to F1 in the normal, chronological sequence, prior to novation, much as would have been the case under traditional contracting.
2.10.27	My comment was a general one. I note that Studio E does not believe that pressures of time compromised its ability to research the technical aspects of this project or the time needed to produce the technical information as required at each stage of its progress.
2.11.1	Please refer to Themes B and E. I note Studio E's comments as to the complexity of the work pertaining to escape

	routes, the work to the lower floors and the smoke ventilation system. Whilst I agree with the second point in Studio E's comment to the effect that the detailed and further development of the design of the over-cladding work, as required for manufacturing, fabrication and installation, fell to Rydon's sub-contractor Harley, that did not excuse Studio E from properly fulfilling its duties in terms of developing the principles of the design for the over-cladding/rainscreen system which it failed to do.
2.11.2	Please refer to 2.6.29 above.
2.11.4	Please refer to Theme A. There is of course a difference between 'unusual' to which I refer in paragraph 2.11.4 of my report, and 'uncertain', as used by Studio E in its response. I stand by my comment that the appointment terms were not unusual at either pre novation stage (as I set out in my report and within this Supplemental Report, they were based on the standard RIBA terms) or post novation under which they were based on a pretty straightforward Rydon document. I accept however that the context in which those services were delivered may well have been 'uncertain', but insofar as that was the case, Studio E were partly to blame. Had they adhered to their obligations under both the RIBA and ARB Codes of Conduct, such uncertainties should have been largely avoided (see my Supplemental Report at paragraph 2.2.9 et seq).
2.11.5	I maintain my opinion with respect to the demands of off-site pre-fabrication. Traditional construction (bricklaying / carpentry/ joinery/ on-site plumbing and on-site finishes) all permit a high level of final adjustment and craftsmanship which are tolerant of inaccuracies and accommodating of needs in terms of final adjustment and 'working' components into position. Off-site pre-fabrication demands very accurate advance information for factory production and is relatively intolerant of final adjustment or modification on-site. I fully acknowledge that the project was made more complex in terms of site operations by the fact that the tenants remained in situ during the course of construction.
	Section 3
In general	Please refer to Themes C, D and J.
3.1.5	This was an error: the word 'guidance' should not have been included in connection with the Building Regulations. The text should have read, '*My indicative approach, which broadly reflects RIBA Stages D and E in the 'old' Plan of Work, is based on an over-cladding arrangement that is as close as possible to the design brief and design proposal that Studio E adopted and developed for the project,*

	taking into consideration the requirements of the Building Regulations and the then guidance contained within ADB2 and Approved Document L Part 1B ('ADL1B')'.
3.1.9	I note and accept this comment.
3.1.10	Please refer to Theme I.
3.1.11	I do not accept Studio E's proposition that my Indicative Approach is '*wholly hypothetical*'. On the contrary, it has been applied to an existing building about which much is known. It offers a design solution in terms of functional performance (thermal values), materials selection, and appearance as close as possible to that of Studio E's solution, whilst applying and achieving compliance with the regulatory framework prevailing at the time. It seeks to carry out the work in terms of scope as described in the RIBA Work Stages for the pre novation stage, and in compliance with the Rydon Deed of appointment post novation stage. Neither the planning consent process nor the issue of the residents remaining in-situ had any relevance, in terms of impact, on the technical aspects or compliance issues that arose to the exercise that I carried out.
3.1.12	Please refer to Theme A. I agree with much of what that Studio E states here. Studio E's comments seem to align largely with those that I have made at paragraph 2.2.13 et seq of my Supplemental Report. Although the stage at which a Design and Build Contractor can be engaged varies (that is, earlier or later in terms of the RIBA Work Stage that has been reached) it is incumbent upon the architect and design team that they deliver the work as required under the terms of their appointment. For example, if tenders are to be sought based on Employer's Requirements being developed only to completion of RIBA Work Stage C, then the work of the architect and design team should be completed to that stage. Thereafter, following the appointment of the Design and Build Contractor (and possible novation of the design team or part of it) further design development work takes place under either the RIBA Work Stages (in this example that would be from Work Stage D etc. onwards) or under a scope that is defined under some other appointment terms, as in the case of Grenfell Tower where that scope was defined within Rydon's Deed of Appointment. In that situation Employer's Requirements were supposed, as set out in the KCTMO appointment, to have reached RIBA Work Stage F1, and the Rydon Deed of Appointment listed services that, albeit described differently to the RIBA defined Work Stages, effectively equated to RIBA Stages F2, K and L. Studio E's response in this respect seems confused. I disagree strongly with Studio E's comment in the third sentence of this response where it states that *'there is no proper set of information for the procurement of a design and build contractor'.*

	That is misleading and represents a fundamental misunderstanding of Design and Build procurement protocols on the part of Studio E. If, however, what Studio E means here is that 'the information for the procurement of a Design and Build Contractor can vary in terms of the stage of its development', then I would agree. But it was for Studio E to define that stage of development. As I have shown under Theme A (at 2.2.27 onwards) Studio E did just that: RIBA Work Stage F1 was to be completed under Employer's Requirements. However, Studio E failed very substantially to deliver against that undertaking as I have shown within my report and Supplemental Report. For clarification, I accept that I should have qualified my point to make clear that the Indicative Approach that I had shown was based largely on the assumption that the production of information would be taken to a full RIBA Stage F1, as anticipated and instructed under the KCTMO appointment, in anticipation of a post novation scope of services by the Design Build Contractor of F2, K and L. In some respects, the Indicative Approach goes a little further than would necessarily be expected at pre-tender stage. Examples of this are shown under Figures 3.41, 3.43, 3.45 and 3.47 where I deal with levels of detail that would normally more often be picked up by the architect at Stage F2 (or its equivalent depending on the terms of the architect's appointment under the Design and Build contract) following novation. I am of the opinion that Rydon's Deed of appointment with Studio E did implicitly require such work. Alternatively, that detailed work could have been picked up through the architect's checking and commentary process with respect to the specialist subcontractor's drawing. I used the Indicative Approach to show the kind of work that would ultimately go into developing a scheme which complied with the Building Regulations and as an indication of the form that such scheme would probably take. The point remains that because under its KCTMO appointment Studio E had committed to advance the Employer's Requirements to Work Stage F1, the main principles of a compliant, technically proficient, and buildable scheme should have been developed by Studio E as a basis for obtaining Design and Build tenders. The information that Studio E produced as Employer's Requirements failed against each of these criteria: it was in important respects not compliant with the Building Regulations, it was in various respects technically wanting, and it did not represent, in terms of its scope and completeness, the equivalent of an RIBA Work Stage F1 progress or offering.
3.1.13 to 3.1.14	I accept that other parties such as Artelia had duties that overlapped with, or indeed in some circumstances relieved Studio E of, specific duties entirely. That said, Studio E retained obligations to ensure that its own terms of appointment were clear (see Theme A) and as Lead Consultant to brief other consultants. I take the view that Studio E's points in this respect do not compromise the value of the

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	Indicative Approach or undermine its validity.
3.2.1. and 3.2.2	I disagree with Studio E on this point, particularly in the context of its acknowledged inexperience with this type of project. I do accept that when an architect is very familiar with the Building Regulations as they relate to a building type with which he/she is also familiar, then detailed consultation of the Building Regulations and/or the Approved Documents might be left until later in the process. If I was to be commissioned to design a restaurant which is a building type with which I have little experience I would at the outset of my work conduct a thorough overview of the regulations involved, particularly in relation to hygiene (separate staff hand-basins for personal hygiene to sinks used for food washing and preparation) and means of escape in case of fire. This would inform my initial concept design work and minimise abortive work. Likewise, an architect who had never designed a stadium must conduct a thorough review of regulations especially in relation to sightlines and means of escape before doing any concept design work as such efforts would inevitably be wholly ill-informed. I accept that in both cases later more detailed examination of regulations and guidelines would be necessary as the design developed, particularly at detailed technical stages, and I accept that, particularly at later stages, detailed input from specialist consultants and where available the Building Control Department is required. The evidence that I have seen with respect to the 2012-16 Works suggests to me that Studio E, despite being wholly unfamiliar with this type of work and project, did not carry out the kind of review of the Building Regulations and Approved Documents that I recommended in section 3.2 of my report. Studio E appears to be dismissing the value of such an exercise in its Appendix to its Opening Statement. As I have set out in my report, in my opinion Studio E's failure to undertake such a review of the Building Regulations and Approved Documents was a serious omission which led to a team that was ill-experienced in this type of work remaining seriously ill-informed in terms of both the requirements of the Building Regulations and the guidance of ADB2 as it progressed its design. I note Studio E's comment under this point to the effect that it recognised the importance of Parts L and B of the Building Regulations, that it recommended the appointment of other specialists, and that it recommended pre-application consultation with the Building Control Officer. In my opinion, however, consultation with Exova was largely ineffective with respect to the over-cladding work (at least in part because of Studio E's poor performance in briefing Exova). Similarly, any consultation with Building Control that did take place bore little apparent benefit in terms of correcting the serious errors that existed within the

	over-cladding proposal.
3.2.6 to 3.2.8	Please refer to Theme F.
3.3.1	I agree with the first sentence. As Lead Consultant, Lead Designer and Architect as Designer, Studio E should, however, have scrutinised the specialist advice received from Max Fordham and as a result questioned its viability in meeting the aspirations of the design team which, as I set out in the Indicative Approach, exceeded the performance requirements of Part L of the Building Regulations. Above all, Studio E should have considered carefully Max Fordham's suggestion to adopt a PIR insulation within the cavity behind the rainscreen. This is something that Studio E should have been competent to do as architects if it had carried out even a cursory review of the ADB2 guidance.
3.3.21	No further comment. See also my comment in response to paragraphs 2.8.9 to 2.8.19 above.
3.3.22	See my commentary in response to paragraph 2.10.26 above.
3.4.1 to 3.4.5	Please refer to Themes F and J. My reading of the Witness Statements of Mr Sounes and Mr Crawford prior to forming my opinions and writing my report did not persuade me that Studio E as Lead Consultant and Lead Designer had properly researched and interrogated the issues involved in the design of the over-cladding. In addition, and as stated at paragraphs 2.9.5 to 2.9.7 above, the evidence that I have seen suggests to me that Exova were neither furnished with relevant information in timely manner, nor possibly at all with the relevant design drawings specifications and reports with respect to the over-cladding. Of course Exova bear heavy responsibility for not calling for such information when they obviously needed it and would have known that it existed; for issuing reports that in part gave assurance on the over-cladding proposal without referencing the design information on which such assurances were made; and for not following up and delivering on the further analysis that it stated would be required. Against that, it is untenable for Studio E to suggest that Exova's 'conclusion' (whatever that might mean) was relevant to my consideration of Studio E's work in this respect. I confirm that I had not '*closed my mind*' to the '*other potential ways of demonstrating compliance*'. I have found no evidence that any alternative route to compliance was ever considered or adopted.
3.5.4	Please refer to Themes F and G and my commentary in response paragraphs 3.4.1 to 3.4.5 above. I have no way of knowing anything about the basis upon which '*PIR or other similar insulation products… have been incorporated, and signed off as compliant, on a large number of other high-rise buildings across the UK*'. This matter is not relevant

	to my consideration of whether the over-cladding work within the 2012-16 Works at Grenfell Tower was compliant with the Building Regulations.
3.5.5	Paragraph 12.7 of ADB2 is perfectly clear in its language and in its guidance as to the scope of its application. A competent architect acting with reasonable care and skill should, in my opinion, understand the relevance of paragraph 12.7 to the window infill panels. The window infill panels are insulation products.
3.5.11	I note this comment but suggest that this is a distraction. Studio E have provided no evidence that they did indeed adopt any of the other routes available to them in demonstrating compliance with the Building Regulations.
3.5.12	I was aware of that evidence at the time of writing my report.
3.5.14 to 3.5.17	I was aware of Mr Sounes' Witness Statement at paragraph 43.7 prior to writing my report {SEA00014273/20}. I believe that Studio E's advice was based on non-thermally broken brackets being allowed for in the calculation.
3.6.4	The Indicative Approach is based on ACP rainscreen cladding for the obvious reason that this is what was ultimately adopted as the preferred rainscreen cladding material.
3.6.7	I acknowledge this error which has been corrected in my report.
3.7.1 to 3.7.18	Please refer to Themes A, B and C. I did not assume that it is necessary (under Design and Build procurement) for architect to '*prepare all the detailed design*' at Employer's Requirements stage, or indeed thereafter. Nor did I assume that the architect can after novation '*dictate* (to the contractor) *what the detailed design should be*'.
3.7.20 to 3.7.23	I accept that I have slightly misquoted ADB2 paragraph 9.3 in my report. In writing my report, and as is shown within my sketches for the Indicative Approach, I had always understood the intention of ADB2 was that cavity barriers should be designed and installed to '*close the edges of cavities, including around openings*'. In this respect the sketches within Section 3 of my report show cavity barriers positioned at the very perimeter of cavities (immediately adjacent to the heads, sills and jambs of openings). Such arrangement ensures that any cavities would be 'closed'. This is what is shown on Diagram 33 to which ADB2 paragraph 9.3 refers. With respect to the proposition that '*there was little or even no point in installing cavity barriers at these head and jamb positions*' I make the following observations: i) The compartment 'lines' did not exist in all column positions (see Figures 3.17, 3.18 and 3.19 of my report). ii) The vertical 'compartment line' cavity barriers in those few positions where Studio E did show them were not sufficiently close at the jambs and thus could not effectively close the cavities at their perimeter edge

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	immediately adjoining the window openings. In any event, it is not for an architect to unilaterally decide that it will disregard the guidance set out in ADB2 if the linear route to compliance with the Building Regulations is adopted. It is equally not for the architect to decide that it will seek compliance with the requirements of the Building Regulations in some other way without a) agreeing with Building Control what that other route to compliance will be; and b) without making a proper assessment that such route to compliance would succeed. 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. I acknowledge however that further work was required to resolve the detail as shown within my Indicative Approach. Progress on that aspect has now been made.
3.7.23 /3.7.14	I note Studio E's comment. My point is that an architect will usually seek to understand the intent that has informed the technical guidance as contained within the Approved Design suite of documents. Without such an understanding an architect would be following the approved guidance in a rote fashion, designing to standards without understanding why those standards require that design. That cannot be sensible.
3.7.25	I believe that any architect is entitled to have an opinion on the merit or otherwise of guidance given within the Approved Documents – just as Studio E have done when expressing their opinion on the merit of cavity barriers being located at particular head and jamb positions around openings as at item 3.7.20 to 3.7.23 above. But, having said that, I believe it is wholly inappropriate for an architect to depart from guidance given within the Approved Documents (as Studio indeed did in a variety of significant ways) unless they have a bona fide basis for so doing, and secures the necessary consent from Building Control to do so. I agree with the second paragraph of Studio E's commentary herein.
3.7.26	The advice referred to was given to me by one of the team members in my office that has assisted me with my work for this Inquiry. I would not expect such knowledge to be normally within the experience of a reasonably competent architect. The cavity barrier that Studio refers to '*at the top compartment line*' is shown at Figure 4.107 of my report. Comparison with the sketches shown at Figures 3.55, 3.56, 3.57, and 3.58 of my Indicative Approach reveal the short-falls of Studio E's

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	work in meeting the guidance in ADB2 and the requirements of the Building Regulations: the top of most of the cavity to the column is not, as it should be, sealed by a cavity barrier.
3.7.31	Please refer to Themes A and B.
3.7.35	This is precisely why an architect routinely develops sketches and drawings at a variety of scales. It is common for architects to inform smaller scale 'general' drawings (both plans and sections) with details sketched at much larger scale that allow the architect to explore and resolve design problems as necessary to 'firm up' the larger scale drawn information that is released ahead of the final details.
3.7.37	Please refer to Themes A and B.
3.8.6	I failed to qualify my comment at paragraph 3.8.6 of my report by making it clear that the comment related to a tender package appropriate to a situation where an architect is working 'client-side' (as Studio E was for KCTMO) on a project and where the architect is under instruction to produce information in support of a robust Employer's Requirements tender package for a negotiated Design and Build tender based on Stage F1 documentation (as was the case for the 2012-16 Works). I note the second paragraph of this point. In this respect I acknowledge that I have based my critique of Studio E's performance with respect to the scope of the work it carried out on: a) its obligations under the appointments that it received respectively from KCTMO and Rydon, and: b) the extent in terms of scope and detail that my own office typically carries out under Design and Build contracts. As I make clear elsewhere, I accept that it is not always possible to '*dot all the I's and cross all the T's*' in respect of tender documentation. Nevertheless, it is important to appreciate that any serious shortfalls in the scope of the work that the architect is able to produce (for whatever reason) against the scope they are under contractual duty to provide should be notified to the Client. That is so that: a) if preferred a decision can be taken on whether to extend the tender documentation preparation period; and b) preparation of information that is deferred from issue pre-tender is successfully picked up by the architect post tender and, if necessary, after novation. My understanding is that, with respect to the over-cladding work, Studio E failed pre novation to report such shortfalls in output and scope to KCTMO. It again failed thereafter (after the issue of the Employer's Requirements) both in the remaining period of its appointment to KCTMO, and subsequently under appointment to Rydon, to make up such shortfall.

	In terms of output scope, many of the problems with the project emanate from the failure on the part of Studio E to do the work that was required of them both pre and post novation.
3.8.8	Please refer to Theme F and my commentary in response to paragraph 2.6.29 above. The requirements of the Building Regulations were not met because in neither of the cases described under 3.8.8 a), b) or c) did Studio E either adopt and satisfy the guidance of ADB2, nor did it use any of the alternate routes to compliance permissible under the Building Regulations.
3.8.13	Section P10/435 of the specification as produced by Studio E and shown at Figure 4.48 of my report appears to be a competent document that adequately describes the type, extent, and fixing discipline for a reputable proprietary cavity barrier system: *Free air provision / gap to back of rainscreen 25 mm horizontal / vertical barriers rightly packed to back of rainscreen panels/ intumescent edge strip to horizontal installation/ angle bracket fasters affixed in accordance with manufacturer's recommendations / length cut to fit/ continuous installation with minimum joints etc.* That information, as a specification, together with the 1:20 drawings as incorporated into Studio E's drawing no. 1279 SEA (06) 110 00 (as shown at Figures 4.49 and 4.51 of my report) does not, however, amount to either a strategy with respect to fire inhibition in terms of passage into, through, or back out of cavities in the over-cladding rainscreen system, nor does it amount to sufficient design information at appropriate scale for the main design challenges involved in such an installation to be understood and resolved in principle prior to tender documents being issued. This has been explained in Section 4 of my report through the Snap-Shot analysis as conducted therein and within Section 3 as demonstrated by the Indicative Approach.
3.8.14	Please refer to Theme A.
3.8.16	I have considered the level of on-site workmanship that is required in this respect. The Siderise video, referred to at paragraph 3.7.34 of my report, demonstrates clearly both the importance of maintaining a 'tight fit' and 'taped seal' at all interfaces of the installation.
3.9.2	Please refer to Themes A and F.
3.9.3	No further comment.

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3.9.6 (b)	No further comment.
3.9.6 (c)	No further comment.
3.9.10	No further comment.
3.9.11 – 3.9.13	The Siderise product literature and video as referred to at paragraph 3.7.34 of my report makes clear the importance of a tight fit of the product which is, self-evidently, to be installed onto a flush surface. It remains my opinion that an issue such as the sealing to the column recesses should have been considered by Studio E at the pre novation stage under RIBA Work Stages E and F1. However, in the absence of that being done it should certainly have been considered by Studio E at the post novation stage as stipulated in the Rydon Deed of Appointment under the Schedule of Architectural Services paragraphs 8, 12, 13, 15, 27, 28, 31 and 31a {RYD00094228}.
3.9.16 (b)	As stated at paragraph 3.9.15(f) of my report, this would ultimately be a matter for discussion with the Fire Engineer and Building Control.
3.10.1	Please refer to Themes A and C.
3.10.1 (a) to (f)	Please refer to Themes A and F.
3.10.2	Please refer to Themes A and B.
3.10.4	Please refer to Themes C and F.
3.10.5	No further comment.
3.10.6	Please refer to Theme A.
3.10.11	Figures 3.60 and 3.62 of my report are intended to show that the failure to close the edges of the window openings with cavity barriers permitted the unimpeded progress of fire and discharge of smoke arising from a fire incident within a flat into the cavity behind the rainscreen cladding. The diagram is not intended to imply that the further passage of fire from bay to bay would not occur following the failure of those cavity barriers that align with compartment walls and floors.
	Section 4
Generally	I confirm that I had given proper attention to the appointment terms at pre and post novation stages and to the obligations that arose for Studio E in consequence of those. To further assist the Inquiry, I have given a fuller explanation of those terms under Theme A of my Supplemental Report. Nothing therein has changed the opinions on

	this matter as set out in my report.
4.1.4	This was a drafting error that occurred in several instances within my report. It has been corrected. I have acknowledged under Theme A that a Design and Build procurement route was anticipated within the KCTMO appointment documentation.
4.1.5	I have seen no novation documents in respect of Studio E LLP's appointment to Rydon. The reference to anticipated Design and Build procurement at the commencement of Work Stage F1 within the KCTMO appointment, and the subsequent evidence of Studio E acting in that novated capacity, provides evidence that the novation took place. In this respect the Rydon Deed of Appointment makes clear that it was Studio E Architects Ltd that were engaged by Rydon, whereas the KCTMO documentation refers to Studio E LLP {SEA00009823}.
4.1.6	No further comment.
4.1.7	Please refer to Theme A. I note that in its Opening Statement Artelia states at paragraph 7.3 that Studio E was appointed as Lead Consultant and further, at paragraph 9.8, that Mr Sounes acted on behalf of Studio E as Lead Consultant. This is consistent with my interpretation at Theme A based on the KCTMO appointment documentation.
4.1.10 to 4.1.12	Please refer to Theme A.
4.1.13	Please refer to Theme A.
4.1.17	No further comment.
4.1.18	Please refer to Theme A.
4.1.19	Please refer to Theme A.
4.1.20	No further comment.
4.1.32	Please see Theme F.
4.1.35	No further comment.
4.1.37 (c)	Please refer to Themes A and B. It is clear to me that it was both a part of Studio E's duty under the Rydon appointment to engage with the process of final selection of the rainscreen cladding system and to carry out the development of necessary further design information in that respect. Such further work by Studio E would then provide the basis for the further detailed work that the specialist cladding sub-contractor would carry out (see Rydon Deed of Appointment Schedule of Architectural

	Services items 7, 8 13, 26, 27, 28, 31 and 31a and c {RYD00094228}).
4.1.39	No further comment.
4.1.41	No further comment.
4.1.42	No further comment.
4.1.46	During visits to the site subsequent to the issue of my report to Core Participants, I have been able to establish that the construction of the wall element behind the infill panels which fills the space between the top of the spandrel panels and the soffit of the slab forming the ceiling /compartment floor over each flat appears to comprise some form of purpose made (but prefabricated) aerated lightweight concrete panel.
4.2.1 (a)	Please refer to Theme F.
4.2.16	See my comments in response to paragraphs 3.2.1 and 3.2.2 above, paragraphs 2.5.6, 2.9.6 and 2.10.7 of my Supplemental Report and paragraph 3.2 et seq of my report.
4.2.18	Please refer to Theme I. I also comment on this point at paragraphs 2.5.5 to 2.5.7 of my Supplemental Report
4.2.19	Please refer to Theme H. I also comment in detail on this point at paragraph 2.5.5 and 2.5.6 of my Supplemental Report
4.2.21	Please refer to Themes F and I.
4.2.22	Please refer to Theme I. I note Studio E's comments in the first two sentences of this paragraph. The reason that at paragraph 4.2.20 of my report I quote from Exova's statement as incorporated into Studio E's Stage D Report (*'Compliance with B4 (external fire spread) will have no adverse effect on the building in relation to fire spread ….but this will be confirmed in an analysis in a future issue of this report'*) is that had such proper analysis been carried out it ought to have revealed at least some of the deficiencies of the over-cladding proposals in terms of their compliance with the guidance of ADB2 and ultimately the requirements of the Building Regulations. I refer to paragraph 5.4.25 and Figures 5.40 and 5.41 of my report where it is apparent that even at an advanced stage of the construction Mr Ashton of Exova was unclear as to the arrangement of cavity barriers within the design.

	This goes to the heart of my point at paragraph 2.10.1 of my Supplemental Report.
4.2.27	With respect to the first paragraph of Studio E's submission I have no further comment. I have addressed the second paragraph of Studio E's submission within Themes E, F and G. See also particular paragraph 2.5.16 of my Supplemental Report. With respect to the third paragraph of Studio E's submission, I confirm that I understood at the time of writing my report that Max Fordham had indeed first proposed the product Celotex FR5000. It was Studio E's responsibility to consider such a recommendation and to check its compliance with the guidance in ADB2 and ultimately with the Building Regulations. In this respect it was Studio E, not Max Fordham, who incorporated the Celotex product into the main construction information (drawings and specification) which formed the principal documentation (Employer's Requirements) upon which the Design and Build tender was procured. With respect to the fourth paragraph of Studio E's submission, please refer to Theme A.
4.2.29	No further comment.
4.2.35	Please see Theme F. The remainder of the paragraph is not relevant: there is no evidence that Studio E sought any other route to compliance with the Requirements of the Building Regulations other than the guidance given in paragraphs 12.6 to 12.9 of ADB2.
4.2.38 and 4.2.41	I have acknowledged this error under paragraph 3.6.7 above.
4.2.49	As the Rheinzink Flat Tile Product was not, in the event, used nothing turns on this point.
4.2.52	Again, as the Rheinzink Flat Tile Product was not, in the event, used nothing turns on this point.
4.3.5	This response represents a misunderstanding of the point that I made. I agree that the dimension between the outer face of a mineral wool type material and the inside face of a rainscreen panel could, and indeed should, remain consistent with that of a PIR type insulation. The point is that with a thicker insulation the dimension between the outer concrete face of the original building (at all positions including spandrel panels and columns) to the inner face of the rainscreen cladding would be greater.
4.3.11 to 4.3.16	No further comment.

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4.3.17 to 4.3.18	It is indeed an architect's duty to interrogate manufacturer's literature to ensure, as far as reasonably possible, that the product(s) to which that literature speaks would be compliant with the Building Regulations in its proposed application. In particular it is important to check as far as possible that literature, performance and test certificates are consistent and appropriately accurate in their description. That is a routine part of the job of an architect as was made absolutely clear to me during my RIBA Part 3 training. I do in a number of instances (for example at paragraphs 4.2.19 and 4.3.25 of my report) consider the effect of misinformation provided by manufacturers and I provide commentary in this respect.
4.3.24	I do not believe that anything turns on this point and I refer the Reader to paragraph 4.2.18 of my report.
4.3.27	No further comment.
4.3.30	No further comment.
4.3.33	Please refer to Theme A for commentary on why 1:5 details were required under both the KCMTO and Rydon appointments at both pre and post novation stages of the project. To elaborate on the criticisms made under paragraph 4.3.33 of my report, I refer the Reader to paragraphs 3.9.11 (b and d) of my report in which I identify possible problems with fire and smoke bi-passing the horizontal cavity barriers. Figures 3.42, 3.43, 3.44 and 3.45 show possible resolutions of this problem and at paragraphs 3.9.11 (e to i) I provide further detailed commentary in this respect. To be clear, I would not necessarily expect such very detailed exploration and conversations to have been developed as part of the Employer's Requirements, even in circumstances where those requirements are based on work up to and including RIBA Work Stage F1. In the absence of such discussion pre novation, I would certainly expect an architect to ensure that these issues were addressed in dialogue with the specialist cladding sub-contractor at post novation stage as indeed was provided for in this case under Rydon's Deed of Appointment in the Schedule of Architectural Services at items 8, 13, 15, 27, 31 and 31a {RYD00094228}. It is my opinion that the failure on the part of Studio E to prepare at least a typical range of 1:5 details for the external over-cladding at pre-novation stage represented both a failure to meet the scope of work required under the KCTMO appointment for Work Stages E and F1, and a failure to exercise reasonable care and skill.

	The same criticism prevails for the post novation stage. In that case the requirements for 1:5 details as needed to '*show sufficient information to construct the project to completion*' were stipulated as a requirement within Studio E's service under Rydon's Deed of Appointment at those paragraphs referenced above.
4.3.36	My point about the insulation is that it clearly failed to meet the guidance of ADB2 under paragraph 12.7 and in consequence the requirements of the Building Regulations. Conversely, whilst the Reynobond rainscreen cladding failed to meet the requirements of the Building Regulations, it did (as stated in my report at paragraph 4.3.35(a)) carry a BBA certification indicating that it had achieved a standard of compliance with respect to ADB2 Diagram 40 stipulations. The point about the Alucobond, VM Zinc, and Proteus products is that whilst I was able, as set out in paragraph 4.3.35 of my report, to assess the compliance or otherwise of each in terms of the stipulations of ADB2 Diagram 40, unlike with respect to the Reynobond product which gave clear evidence of its performance in conditions of fire at Grenfell (regardless of any test certification), I have no information or indication – irrespective of any test reports and certification that are available – to indicate how each of those other products would have performed if subjected to the same fire conditions as those to which the Reynobond product was subjected to at Grenfell Tower.
4.3.64	No further comment.
4.3.68	No further comment.
4.3.69	No further comment.
4.3.71	I accept the point about the purpose of Figure 4.52 of my report.
4.3.72	Please refer to Themes A and B. My criticism is that at no point in its Employer's Requirement work did Studio E show a drawing of the kind exhibited at Figure 3.27 of my report showing a general arrangement plan of a complete floor with vertical cavity barriers shown.
4.3.73	No further comment.
4.3.78	Please refer to Themes A and B and my commentary in response to paragraph 4.3.33 above.
4.3.80	No further comment.
4.3.81	The requirements of the cavity barrier provision as necessary to meet the guidance contained within ADB2 are shown at paragraph 3.9.19 and at Figures 3.55, 3.56, 3.57 and 3.58 of my report.

	As illustrated at Figure 4.59 of my report, Studio E's provisions are inadequate in this respect as they fail to close the top of the columns, and they fail to close the top of the concrete upstand above windows as per the guidance / requirement shown in ADB2 at Diagram 33. In that respect the inadequacy of ADB2's diagram 33 is noted, as is the lack of a 'plan' diagram to complement that section drawing. My view remains that Studio E failed to make a proper design and provision of cavity barriers at the Crown, and I suggest that this was in part because it failed to adequately explore this area through drawings.
4.3.91	My interpretation of the guidance as given within ADB2 will be a matter for the Inquiry to consider. It is clear to me that the infill panels form part of the 'external envelope' at Grenfell Tower. As such I believe that they should have complied with ADB2 paragraph 12.5: '*The external envelope of a building should not provide a medium for fire spread… The use of combustible materials in the cladding system and extensive cavities may present such a risk in tall buildings.*' ADB2 paragraph 12.7 further reinforces the requirement that any '*insulation product*' (in a building over 18 m high) '*should be of limited combustibility*'. Indeed it is notable in this respect that the insulated panels sit in front of the purpose made (but prefabricated) aerated lightweight concrete panel described in my response to paragraph 4.1.46 above and which, with those panels, forms a concealed section of wall the sides of which were closed by the window reveals.
4.3.96	Please refer to Theme A.
4.4.4 to 4.4.6	The commentary that I have provided at these paragraphs of my report is merely intended to explain my understanding. The Inquiry will determine the legal implications of these matters on the evidence before it.
4.4.8 / 4.4.13	With respect to first paragraph please of this refer to Themes A and B. With respect to second paragraph whilst an architect may, even if he has satisfied himself that such is true, draw some comfort from the fact that a contractor/sub-contractor team has performed successfully on a project of similar kind previously and elsewhere, that does not in my opinion entitle the architect to pass those responsibilities that he has assumed under the terms of his appointments at either pre or post novation stages to that contractor or specialist sub-contractor. With respect to third paragraph, please refer to Theme D. The fact that tenderers appeared not to have commented or raised questions of the information provided to them is not, in my view, indicative of the technical proficiency of the work contained within the Employer's Requirements documentation.

	With respect to the fourth paragraph, please see my commentary in response to paragraph 1 above.
4.4.14	I have acknowledged this drafting error at paragraph 4.1.4 above.
4.4.16	Please refer to Theme K. The reference to 'rainscreen contract' is again a drafting error. This has been corrected in my report. I have no further comments regarding matters related to Exova's appointment.
4.4.17 and 4.4.18	The reference to 'rainscreen appointment' is a drafting error. This error has been corrected in my report. I do consider that a matrix of responsibilities is particularly important under larger and complex Design and Build contracts. Normally I would expect the Design and Build contractor to create and manage such a matrix. In circumstances where, for whatever reason, a Design and Build Contractor was unwilling or unable to prepare such a matrix, in my view the architect should prepare one as recommended in the RIBA Job Book from which I quote at paragraph 4.4.20 of my report. In this respect see also my comment at paragraph 5.1.36 of my report.
4.4.19	Please refer to Themes A and B. The contractual provisions upon which I rely in this respect are the respective pre and post novation appointments of KCTMO and Rydon.
4.4.20	Compliance with the recommendations and guidance of the RIBA Job Book is usually good evidence that an architect is taking reasonable skill and care in their work.
4.4.21	The reference is to paragraph 4.4.16(c) of my report wherein I express my opinion that there was inadequate appreciation on the parts of Rydon, Studio E and Artelia and that much of the work that should have been completed by Studio E under its pre novation appointment still needed to be carried out following novation to Rydon. With respect to the second paragraph of Studio E's submission, I have set out my opinion of Studio E's duties and responsibilities under the contractual and appointment arrangements for this project under Themes A and B and these have not varied. With respect to the fourth paragraph I refer again to my commentary in response to paragraph 1 above.
4.4.22	Please refer to Theme I

4.4.35	Please refer to Theme F
4.4.41	Please refer to Theme F
4.4.43 (b)	No further comment.
4.4.45 to 4.4.48	Please refer to Themes A and B. I think that it is reasonable to interpret a change of design post novation from a zinc composite cladding flat panel cladding system to an aluminium composite cassette system as 'fundamental'. It requires a substantial technical review in terms of the compliance of the over-cladding scheme with the Building Regulations and significant changes to the detailed design drawings. Whilst the specialist cladding sub-contractor could be expected to assist greatly in this process, Studio E had significant responsibilities with respect to this work in terms of the Rydon Deed of Appointment Schedule of Architectural Services for example, at paragraphs 8, 13, 15, 27, 31 and 31a and c {RYD00094228}.
4.4.64	No further comment.
4.4.72	Please see my Supplemental Report at paragraphs 2.3.40 to 2.3.42.
4.4.77	No further comment.
4.4.84 to 4.4.88	At paragraph 4.4.84 of my report I qualify the (possible) criticism with the statement '*if they* (that is Studio E) *chose to read beyond the first page of the BBA statement*'. Whether it did or not will be a matter for evidence. Class '0' (zero) is the correct written designation but 'O' is the common parlance.
4.4.99	It will be a matter of evidence as to whether Harley / Studio E discussed and agreed the principle of the horizontal cavity barriers as shown on Harley's drawing (see Figure 4.78 of my report) in the position shown (i.e. above the compartment floor) with Building Control.
4.4.111	No further comment.
4.4.113 (a)	Please refer to Theme I.
4.4.117-4.4.125	No further comment.
4.4.123 and 4.4.124	No further comment on the first and second paragraphs of Studio E's response. With respect to third paragraph 'Fire Stop' is defined at Appendix E of ADB2 as '*A seal provided to close an imperfection of fit or design tolerance between elements or components, to restrict the passage of fire and smoke*'. Fire-Stopping is shown on ADB2 Diagram 33 as a provision typically applied between compartment floors (and by logical deduction also compartment walls)

	and the inside face of external walls. There seems ample evidence in the emails referred to in my report that a combination of casual/inaccurate terminology and an interposing of the terms 'firestopping' with 'fire barriers' and 'cavity barriers' occurred on this project (as Mr Crawford writes on one occasion: see paragraph 4.4.119 of my report). This is indicative, in my view, of a general confusion which should not have prevailed at any time on the project and certainly not at this late stage.
4.4.131	With respect to the first paragraph, I refer to my comments in response to paragraph 4.3.81 above. I note the correction in the third paragraph and refer to Figure 4.92 of my report where I correctly describe the commentary contained on the status B stamp. In this respect the point made in paragraph 4.4.131 of my report stands unaltered: Studio E failed in their duty under the Rydon appointment to draw attention to the failure of Harley's proposals for the cavity barriers at the Crown to comply with the guidance of ADB2 and therefore the requirements of the Building Regulations.
4.4.137	Please refer to Themes A and B
4.4.140	No further comment.
4.4.144	Please refer to Themes A and B
4.4.145 and 4.4.146	No further comment.
4.4.147	Please refer to Themes A and B.
4.4.151	With respect to the first paragraph of Studio E's submission I refer to my response to paragraphs 4.4.8 to 4.4.13 above. With respect to the first sentence of the second paragraph of Studio E's submission, I refer to clauses 31, 31a and 31c of the Rydon Deed of Appointment Schedule of Architectural Services as indicative of the further design work which Studio E was obliged to provide under its appointment to Rydon. With respect to the second sentence, I refer to my responses at paragraphs 2.2.51 and 2.2.52 of my Supplemental Report.
4.4.153 to 4.4.159	Please refer to Themes A, B and F.
4.5.7	'As-Built' drawings have a range of important uses. To have conflicting information contained within the drawings, particularly on issues as significant as the cladding material, is in my experience extraordinary and inexcusable.
4.5.10	No further comment.

4.5.11	No further comment.
4.5.17	No further comment.
	Section 5
5.1.28	No further comment.
5.1.36	No further comment.
5.1.37	Please refer to Themes A and B. With respect to the reference to paragraph 6.13 of Studio E's Opening Statement I refer again to paragraphs 2.2.51 and 2.2.52 of my Supplemental Report.
5.2.5	This comment is noted and accepted. My point remains that an issue as important as the compliance of the main insulation within the over-cladding system, with all its implications with respect to the dimensional principles for the over-cladding design (see paragraph 4.3.5 above) should have been clearly communicated and in principle agreed with Building Control early in the work as carried out under the KCTMO appointment. I have seen no evidence that this was done.
5.2.16	Please refer to Themes F and I.
5.2.18	Please refer to my Supplemental Report at Theme D paragraph 2.5.5 and Theme I paragraph 2.10.5, and to my commentary in response to paragraphs 3.3.1 and 4.2.16 above.
5.3.1	No further comment.
5.3.5	I note the correction with respect to my unintentional omission of the word 'fire' as per 'fire authority'.
5.3.13 and 5.3.17 / 5.3.18	Please refer to Themes A and B. I note and accept the qualification 'might' in the RIBA Job Book quotation that I have exhibited at Figure 5.31. My point otherwise stands. I accept the point at paragraph four ('*In addition bullet point 4 states…*') and in this respect refer to Theme A of my Supplemental Report where I acknowledge and further explain the provisions for delay under the RIBA Work Plan F1 notes, as exhibited at Figure 4.3 of my report. With respect to paragraph 5, I note Studio E's reference to the heading 'Design and Build' at the foot of Figure 5.31 of my report. This refers to circumstances following an early novation as the reference is to 'Contractor Client'. As I explain under Themes A and E, the point of novation under the KCTMO appointment was set

	relatively late at the conclusion of RIBA Work Stage F1. I have seen no evidence that this arrangement was ever varied. I do not agree with Studio E's interpretation of this paragraph from the RIBA Job Book. With respect to paragraph 6 of Studio E's submission and the quote to which it refers commencing '*In design and build procurement…*' the reference to '*relatively rare*' is noted. That aside, as I state at Theme C: '*as an 'Employer Client', KCTMO's appointment terms were therefore evidently 'relatively rare' but in this respect those requirements were absolutely clear…*' Studio E should have complied, in terms of the scope of its Employer's Requirements work output, with the obligations specific to the terms of this appointment that assumed a comparatively late novation at the conclusion of RIBA Work Stage F1. I refer the Reader to Themes A and B with respect to the remainder of Studio E's submission.
5.3.19	No further comment.
5.4.1	That point is confirmed in the email that I exhibit at Figure 5.32 of my report.
5.4.2	I accept the point relating to my criticism of language but remain of the view that serious dialogue with Building Control should, in this respect, have been commenced much earlier, and under the KCTMO appointment.
5.4.5	No further comment.
5.4.6	No further comment.
5.4.8	No further comment.
5.4.10	No further comment.
5.4.17 to 5.4.19	No further comment.
5.4.21 to 5.4.22	No further comment.
5.4.23	No further comment.
5.4.24	With respect to the second sentence of Studio E's submission, I make it clear at paragraph 5.4.10 of my report that especially with Design and Build projects, and for larger and more complex projects such as the 2012-16 Works, it *'is simply not practical to submit all the detail required for a full plans application when that application is first made'*. It nevertheless remains my firm opinion that the Full Plans Application when submitted should carry sufficient drawn information for Building Control to understand the principal organisation of the building and the general scope of the work proposed.

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	In this respect I remain highly critical of Studio E for its part in allowing a situation to arise where the Full Plans application was delivered so late, well after serious demolition/ building work had begun in the context of a residential building of this kind that was in full occupation, and without any supporting drawings whatsoever to explain the principal organisation of the building and the general scope of the work proposed.
5.4.25 (b)	No further comment.
5.4.25 (c) and (d)	Please refer to Theme F.
5.4.25 (f)	No further comment.
5.4.25 (g)	No further comment.
5.4.26	No further comment.
5.4.27 (c) and (d)	No further comment.
5.4.31	I accept the point that the reasons for the changes to the cladding were outside Studio E's control and that there were ongoing challenging circumstances pertaining to Planning Department issues with respect to the cladding colour. Such difficulties are a common occurrence under Design and Build contracts. That acknowledged, I maintain my criticisms of Studio E with respect to its role in the Building Regulations submission process.
5.4.34	This will be a matter for evidence, but I remain of the view that the late delivery and generally ill coordinated manner in which information was managed, monitored and submitted to Building Control would inevitably have led to confusion and inefficiencies in terms of its response.
5.4.36	No further comment.
5.4.37	I note this explanation
5.4.46	No further comment.
5.4.47 and 5.4.48	No further comment.
5.4.48	No further comment.
5.4.51 (a)	My reference to a 'later stage' made at paragraph 4.2.54 of my report did not anticipate that this matter would remain unresolved well into the construction period of the project
5.4.51 (b)	No further comment.
5.4.51 (c) and (d)	No further comment.

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5.4.51 (e)	No further comment.
5.4.51 (g)	No further comment.
5.4.52	No further comment.
5.4.55	No further comment.
5.4.60	I refer to the 'Architect's Pocket Book' (Part 3 of my Supplemental Report, page 32) which shows drawing conventions which clearly delineate insulation quilt and insulation board. These conventions are also available on computer aided drawing programmes. They have prevailed throughout my career and are commonly understood and applied by architects. The reason for such conventions is that they ensure common understanding of intent. With respect to the second and third paragraphs: no further comments.
5.4.65	Please refer to Theme F
5.4.67	No further comment.
5.4.69	No further comment.
5.4.70 to 5.4.72	No further comment.
5.5.6	My comment was in respect of the precision ('96%') with which the progress was recorded. I remain unclear as to how progress was tracked with this precision.
	Section 6
Generally	No further comment.
6.1.3	Please refer to Themes A and B.
6.1.8	Please refer to Themes A and B.
6.1.10	No further comment.
6.3.1	No further comment.
6.3.2	I now understand that SEAL was not a newly formed company. I stand corrected on the date of '2017'.
6.3.5	No further comment.
6.4.1 and 6.4.2	No further comment.
6.4.3	By 'over-cladding drawings' I am referring to Studio E drawings of the external wall configuration. Extracts from such drawings have been incorporated within Section

	4 of my report.
6.4.4/ 6.6.5	No further comment.
6.6.7	No further comment.
6.6.9 - 6.6.15	No further comment.
6.6.23 (a) to (d)	The reference should be to Figure 6.16 of my report. I have no further comments with respect to the second paragraph of this response.
6.6.23 (f), (g) and (h)	No further comment.
6.6.27 – 6.6.29	I have seen no evidence that the record set included drawings issued by other consultants.
6.8.6	No further comment.

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