Grenfell Tower Inquiry

Paul Hyett, HKS Architects Ltd

Supplemental Report

Part 1

1.0 Preface

1.1 The Opening Statements of Core Participants have highlighted some factual errors which I have sought to correct in Revision 01 of my report. These errors are listed in the Schedule of Corrections which accompanies this Supplemental Report.

1.2 An example of such factual errors includes references to Artelia variously as 'Project Manager' and 'Client Representative' at 'List of Characters, Organisations and Acronyms' and at paragraphs 4.4.16, 4.4.22 and 6.3.6 of my report. In this respect I comment as follows:

1.3 Artelia was engaged by the TMO to perform RICS Employer's Agent services and RICS Quantity Surveyor services until 2016 and CDM Co-Ordinator Services until 6 October 2015. The signed RICS Standard Form of Consultant's Appointment is dated 23 June 2014 {ART00005742}.

1.4 Whilst Artelia (as Appleyards) issued a draft for a revised brief during May 2013 (Appleyards Project Ref: 11833.12.Job.PM {ART00009032) proposing that it (Artelia) would be assuming the role of Project Manager and Lead Consultant, I note that Artelia's stated position (as set out at paragraph 5.1 of its Opening Statement) is that this appointment was never taken up. Whether Artelia did at any time 'assume' either of those roles (Project Manager and/or Lead Consultant) will be a matter upon which the Inquiry will decide based on the evidence placed before it.

1.5 I have, in the meantime, amended my report on the assumption that Artelia acted only as Employer's Agent, QS and CDM Co-Ordinator.

1.6 I have also corrected minor additional errata (typographical errors etc.) which I have discovered within my report since its issue to Core Participants. Such corrections are also set out in the Schedule of Corrections as incorporated within Revision 01 of my report.

1.7 Where, as a result of reading the Opening Statements, I have considered that additional commentary is required to further explain the opinions set out in my report, I have incorporated such commentary into this Supplemental Report.

1.8 Where, as a result of reading the Opening Statements, I have decided that my opinion should be altered, I have made such alteration as I have seen fit and explained the reason(s) for any such alteration in this Supplemental Report.

2 Studio E Opening Statement

2.1 Introduction

2.1.1 Studio E's Opening Statement, and its Appendix, are both very repetitive. I have therefore considered it most appropriate to respond by addressing what I consider to be the key 'themes' which Studio E has raised in response to my first report. I have identified eleven themes which I have referred to as Theme A through to Theme K. Each is given a title that summarises the Studio E Opening Statement subject matter with which it deals. In order to assist the Reader, I have provided, as far as possible, some examples of those paragraphs within Studio E's Opening Statement to which the themes relate.

2.1.2 I have arranged the themes into four discrete groups as follows:

i) Themes A to D (see 2.2 to 2.5):

- A - That the role of the architect differs under Design and Build procurement to that under traditional procurement, and that there was a lack of clarity about the services Studio E were to provide both pre and post novation.
- B - Issues of design responsibility.
- C - That in preparing the 'Indicative Approach' as contained within Section 3 of my report I have failed to give proper consideration to what is referred to by Studio E as the circumstances within which Studio E was operating.
- D - That I have failed to apply reasonable standards of care and skill based on expectations at the relevant time.

ii) Themes E to G (see 2.6 to 2.8):

- E - The Regulatory System's fitness for purpose.
- F - Four routes to compliance.
- G - That the Regulatory System permits use of combustible materials.

iii) Themes H and I (see 2.9 and 2.10):

- H - That Product Manufacturers produced information and data which had the effect of misleading designers to (in consequence) consider that their products were safe in circumstances where they were not.

  I - That my first Report fails to give proper consideration to the input that Studio E sought from specialists and consultants, including Exova.

iv) Themes J and K (see 2.11 and 2.12):

- J - The performance of cavity barriers within metal rainscreen cladding systems.

- K - Response to comments on my experience.

2.1.3 Thereafter (see 2.13) I make further comments about other issues that are raised in the Appendix to Studio E's Opening Statement.

2.1.4 Finally, I incorporate appendices A to D which contain as exhibits various items of reference material that I have cited in my responses to Studio E's Opening statement and Appendix.

2.1.5 As with my first report, I again qualify the criticisms that I make of Studio E's work with the following comment: wherever I opine that the work fell below the standard of care and skill expected of a reasonably competent architect, that comment is made in the context of the issue cited. I am not in a position to comment more generally on Studio E's wider practice outside of the Grenfell Tower project.

2.2 Theme A: That the role of the architect differs under Design and Build procurement to that under traditional procurement and the alleged lack of clarity about the services Studio E were to provide both pre and post novation.

I understand Studio E to be saying that in circumstances where an architect is novated under a Design and Build procurement process, the role of an architect differs to that under a 'traditional' procurement process, and that I have neither taken that fact, nor issues regarding an alleged lack of clarity of Studio E's services both pre and post novation, into proper account when preparing my report (Opening Statement paragraphs 6.12 and 6.13, 7.1 and 7.6).

2.2.1 In dealing with these issues, it has been necessary to expand on the work contained within my first report in order to explain in greater detail the characteristics of Design and Build as a procurement route.

2.2.2 The role of an architect does indeed differ under Design and Build procurement to that under 'traditional' procurement and I took this into careful account in the preparation of my report. The principal differences relate to:

- Responsibility transfer in terms of the 'instructing' client.
- Disruption to normal work sequence.
- Possible variations to the scope of an architect's service under Design and Build.

I will briefly discuss each of these below.

Responsibility transfer in terms of the 'instructing client':

2.2.3 Studio E's client changed, following novation, from KTCMO (Employer Client) to Rydon (Contractor Client).

2.2.4 'Employer Client' and 'Contractor Client' are terms adopted by the RIBA – see RIBA Eighth Edition Job Book at page 30 {INQ00013943}. The RIBA draws specific attention to the importance of clearly defining an architect's duties with respect to the pre and post novation stages under Design and Build contracting. (In this respect as I explain below, an architect may not always be retained to work both pre and post novation, albeit in this case Studio E was so retained). In preparing my report I carefully considered the particular responsibilities allocated to Studio E under those separate appointments as defined by the respective appointment documents. Whatever the circumstance, it is a professional duty that is incumbent on the architect under the RIBA and ARB Codes of Conduct (RIBA Principle 2.3 / ARB Clause 4.4) to ensure that the architect's role, duties and responsibilities are clearly defined for each stage of a project.

2.2.5 It is for these reasons that I am unimpressed by Studio E's assertions, as set out in its Opening Statement, that somehow the vagaries of the Design and Build process, or the inadequacies of the various appointment documents, provide an excuse for its failure to perform its duties with respect to the 2012-16 Works either adequately or in some cases at all. Good guidance (for example the RIBA Job Book) exists, and the architect is duty bound to ensure that clear and adequate appointment terms prevail that will enable the discharge of his/her duties in accordance with the appropriate standards of competence and care.

2.2.6 I quote from guidance as given in the RIBA Job Book at page 29 as follows:

> **'Appointment of architect as consultant in design and build**
>
> *… This is a role quite different from that with the traditional commission, in that the architect acts solely as consultant to either an Employer Client or a Contractor Client at any one time. It is not uncommon for the architect to be engaged by both, but this would be sequential, never simultaneous, and would entail either the so-called consultant switch or novation. Even under this kind of arrangement it is often extremely difficult to separate clearly legal accountability and design responsibility. The degree of involvement with either Employer or Contractor will vary depending on the particular arrangements.'*

2.2.7 Typical duties under pre-novation (Employer Client) and post novation (Contractor Client) are set out on pages 30 and 31 of the RIBA Job Book.

2.2.8 An architect should be well aware not only that it is important to ensure that the duties and scope of services to be provided at any and every stage of his/her involvement under a Design and Build contract are clearly defined, but also that it is his/her clear professional duty to ensure that this is done and properly recorded.

2.2.9 I quote from Principle 2.1 of the RIBA Code of Conduct:

> *'Members are expected to apply high standards of skill, knowledge and care in all their work'.*

2.2.10 It is in my opinion implicit in compliance with RIBA Code of Conduct Principle 2.1 that an architect should ensure that in the case of a Design and Build project, where the same architect is to be engaged (albeit by separate parties) both pre and post novation, that the appointment documents are so tailored as to enable the architect to deliver those services 'seamlessly' across the duration of the job.

2.2.11 If the architect is frustrated, for whatever reason, in his/her efforts to comply with this Principle, he/she should bring the matter to the attention of the Client(s) in order that a resolution can be found. This is common sense.

2.2.12 As I have shown in my report, and will further seek to show below, the spectrum of services that it was intended should be provided by Studio E 'across' the duration of the project from inception to completion was initially a full RIBA Work Stage A to L Service. That is in my opinion certainly the basis upon which Studio E's performance in terms of competence and completeness should be measured up to the point of novation. This is what I have done in preparing my report, and this is the basis upon which I supply this additional commentary in this Supplemental Report.

<u>Disruption to normal work sequence:</u>

2.2.13 The point of novation can significantly disrupt the sequencing of the architect's work. Novation can occur very early – for example at the conclusion of RIBA Work Stage C. I quote from RIBA Eighth Edition Job Book page 195 {INQ00013943}:

> *'In design and build procurement, Stage G (and H) may be out of sequence with the other Work Stages. In cases where the client wishes to tender on detailed information the stages may follow something close to the normal sequence, but in others, where the design and build contract is entered into on minimal information, Stage G may follow Stage C, with Stages D – F occurring after the contract is let and sometimes during construction'.*

2.2.14 In circumstances where novation can take place as early as Work Stage C, the normal (chronological) sequencing of the architect's work would vary. I quote the RIBA's guidance notes at page 20 of Part 3 of this Supplemental Report (note: in this and all other cases the relevant quotation is indicated within the appendices):

> *'If the Employer's Requirements give minimal information and require the Contractor's Proposals only to be developed to the end of Stage C before tender, the order would be Stages A, C, G and H. After acceptance of tender the stages would be J, D, E, F, K and L.*

I consider that it is implicit in this guidance note that the architect would carry out Work Stage B as well as Work Stages A, C, G and H under appointment to the Employer Client pre novation. I do not in this respect know why there is no reference in this guidance note to Work Stage B, but in terms of this Inquiry nothing actually turns on this point. It is notable RIBA's guidance notes (see page 21 of Part 3 of my Supplemental Report) a similar reference is made, albeit Stages E and F are completely omitted:

> *'In the pre-construction stages the architect/consultant may provide services in any of or all of Work Stages A-F prior to completing development of the 'Employer's Requirements' at Stage G and inviting tenders at Stage H. If the Employer's Requirements are to give minimal information the architect/consultant's services* (to the Employer Client pre-novation) *could be stages A, C, possibly D, G and H, followed if appropriate by stages J, K and L'* (comment in parenthesis is mine).

The absence of reference to Stages E, F1 and F2 in this case is based on the assumption that the architect will not be novated and will thus remain appointed to the 'Employer Client' as Employer's Agent (see paragraph 1a to page 19 of Part 3 of this Supplemental Report).

2.2.15 Examination of the RIBA Standard Form of Appointment as used for the Studio E / KCTMO appointment suggests some ambiguities in its preparation. Under page 2 of (RIBA) Appendix A Project Data 2010 {SEA00009823/2} it stated that the project would '*be procured by Design and build contract*'. However, under (RIBA) Appendix B Services 2010 {SEA00009824/2} it stated that Studio E would provide Work Stages A-L under the roles of Lead Consultant, Lead Designer and Architect as Designer, and A-E as Landscape Designer. Whilst nothing turns on the latter point, the reference to Work Stages A-L in favour of KCTMO for the former three roles seems to be at variance with the stated procurement route of Design and Build. I note that Mr Sounes explained in his oral evidence that when first preparing these documents Studio E were not clear precisely what was going to happen and that reference to stages A-L in the final version of the contract documents was copied over from an earlier draft (see Transcript Day 7/page 70).

2.2.16 What does seem to be clear is that, as set out under the KCTMO Appointment at (RIBA) Appendix D - Project Brief {SEA00009826} Studio E intended that it should provide 'RIBA Stages F2 / K / L' following its 'Novation to a Design and Build Contractor'. This clearly implies that Studio E were required to complete a full Stage E and F1 within its service to KCTMO. While it is notable in this respect that (RIBA) Appendix D {SEA00009826} contains no reference to Work Stage F1, I note that Mr Sounes said in his oral evidence that Stage F1 was "rolled into Stage E" in Appendix D (see Transcript Day 7/page 75/line 23). It therefore appears that the omission of Work Stage F1 may have been a simple drafting error as it is not practicable to carry out Work Stage F2 without having hitherto carried out Work Stage F1. In this regard I note that in an earlier version of Appendix D (which was attached to Mr Sounes's e-mail of 12 June 2012 - see {SEA00004568}) Stage F1 was included as part of the pre-novation work. Mr Sounes also confirmed in his oral evidence that it was at Stage F2 onwards that he understood Studio E to have been novated to the Design & Build Contractor (see Transcript at Day 7/pages 75-76).

2.2.17 I have therefore amended my Report under Revision 01 on the basis that Work Stage F1 was to be carried out under the pre-novation KCTMO appointment. In this respect I acknowledge and correct my error within paragraph 4.1.13 of my report wherein I stated that '*In terms of design and production information the drawings and specification should therefore, under the KCTMO appointment, have reached the Stage of F1 and F2'*. It is clear from the Studio E/KCTMO appointment documentation and from the oral evidence of Mr Sounes that Studio E were required to complete a full Stage E and F1 within its service to KCTMO.

2.2.18 In those circumstances it is very important to note that novation occurred relatively late (from Stage F2) and that accordingly Studio E would be required to provide a large part of the A to L Work Stage services (i.e. at least Work Stages A to E/F1) under the KCTMO appointment.

2.2.19 With respect to the over-cladding part of the project, my assessment is that the information production under the Studio E/KCTMO appointment fell short of what Studio E was required to do. As shown in my report, not only were there serious mistakes within Studio E's work throughout Work Stages C, D, E and F1 with respect to this part of its work, in terms of scope, Studio E's services under Stages E and F1 also fell short of what it was required to provide under the basic services described in the RIBA Outline Plan of Work {SEA00009824}.

2.2.20 Although Studio E's novation to Rydon occurred at a relatively late stage, such 'lateness' is neither unusual, nor is it unanticipated: The RIBA guidance notes (see page 21 of Part 3 of this Supplemental Report) clearly anticipate that novation can take place even as late as at the end of Stage F2. I quote again as follows:

'In the pre-construction stages the architect/consultant may provide services in any or all of Work Stages A-F prior to completing development of the 'Employer's Requirements' at Stage G and inviting tenders at stage H'.

2.2.21 Put simply, the later the novation, the greater the Employer Client control over the design, and the greater the output required of the architect pre-novation in terms of meeting that requirement for control. In offering and accepting the provision of such an extensive pre-novation service under the Employer Client stage of this Design and Build project, it is my opinion that Studio E assumed responsibility for delivering a full service up to the end of Stage F1 as set out in (RIBA) Appendix D of the appointment document {SEA00009826}.

2.2.22 In the case of Studio E's appointment to KTCMO, minimal disruption took place to the normal sequencing of the RIBA Work Stages which appear to have been carried out in chronological order; that is A, B, C, D, E, and F1. The principal exception to this would have been the submissions under Building Regulations (normally included under Work Stage F1). In the RIBA Outline Plan of Work contained at Figure 4.3 of my report, such disruption to sequencing in this respect is anticipated: see footnote to Figure 4.3. It is interesting to note, however, that the Fee Schedule at Annex B to the Rydon/ Studio E Deed of Appointment makes a provision of £45,156 for Stage F1 {RYD00094228/14} – perhaps as an acknowledgement that this part of Stage F1 would not be completed as part of the KCTMO appointment of Studio E, but instead would form part of the service delivered post novation 'through' the Design and Build contract.

2.2.23 With the qualification of the error in relation to my assertion that Stage F2 should have been completed under the pre-novation appointment to KCTMO, I took each of the above points into account in the preparation of my report and when assessing Studio E's performance under both the pre and post novation stages of the Design and Build procurement route adopted for the delivery of the 2012-16 Works.

<u>Possible variations to the scope of an architect's service under Design and Build:</u>

2.2.24 There are a variety of different ways that an architect (and indeed most other members of a design team) can be appointed under a Design and Build arrangement. I explain below each of the principal appointment arrangements (herein designated by me as i) to iv)) together with an explanation of the 'traditional appointment' which previously prevailed for virtually all projects, but which is now generally restricted to smaller scale work.

<u>Traditional Appointment:</u> architect appointed (and retained) by Client to work through entire process from concept design to construction inspection, contract administration and handover (Work Stages A-L).

Design and Build type (i): architect employed initially by Employer Client to prepare Employer's Requirements as a basis for securing Design and Build tenders or negotiated tender price. Thereafter, architect employed by Design and Build Contractor (Contractor Client) following novation or 'consultant switch'. (This was the version under which the 2012-16 Works were procured, albeit through the process of novation as Rydon introduced their own appointment terms in lieu of the RIBA document used for the pre-novation phase. Accordingly, this is the version against which I have assessed the performance of Studio E in terms of its service to both KCTMO and Rydon).

Design and Build type (ii): architect employed by Employer Client to prepare Employer's Requirements as a basis for securing Design and Build tenders or negotiated tender price. Thereafter, the architect remains 'client side' as advisor in a 'guardian' type role and the appointed Design and Build contractor appoints an alternative architect/designer to assist in seeing the project through to completion.

Design and Build type (iii): architect employed from outset by Design and Build contractor (Contractor Client) to prepare a scheme from 'scratch' / first principles. Thereafter, if the contractor's bid/tender is successful, the architect remains involved under the Design and Build contractor's employ through to the completion, at least, of construction documentation.

Design and Build type (iv): This usually operates in conjunction with Design and Build type (ii) whereby an architect works for Design and Build Contractor (Contractor Client) to develop a scheme that has been 'handed over' by the (Employer) Client albeit based on the work of *another* architect/designer (as under Design and Build type (ii) above) in some stage of design development varying from concept only (old RIBA Work Stage C) to full Stage E and even part of Stage F.

2.2.25 As is self-evident from the above summary of the principal categories of Design and Build procurement 'types', both the scope of an architect's design and production/documentation services under Work Stages C through to F, and the party to whom the architect is responsible in terms of the services provided (that is Employer Client or Contractor Client) can indeed vary greatly under Design and Build procurement.

2.2.26 Notwithstanding that, the architect's role in administering the construction contract and certifying payments to the contractor is usually significantly reduced as indicated under the heading 'Design and Build Procurement' on page 263 of the Eighth Edition of the RIBA Job Book {INQ00013943}. I quote in this respect as follows:

> *'There is normally no role for impartial contract administration with design and build procurement. The architect will therefore have no direct involvement in contract administration'.*

This would lead to a corresponding reduction in the scope of service under Work Stage K that an architect would provide when novated / employed by a Contractor Client.

Services that Studio E committed to provide to KCTMO pre-novation:

2.2.27 It is important to note that the KCTMO appointment appears, from the outset, to have assumed that the project would be delivered through a Design and Build procurement route.

2.2.28 Furthermore, as discussed above, it seems clear that the point of novation was from the outset planned (as confirmed in Appendix D of the RIBA appointment document used for the KCTMO appointment of Studio E {SEA00009826}) to take place at the commencement of RIBA Work Stage F2.

2.2.29 That therefore required that all services described within the RIBA Plan of Work up to the end of Work Stage F1 should, under the terms of the appointment, have been completed under the KCTMO appointment. The possible exception to this is was the Building Regulations submission (as referred to in the footnote of Figure 4.3 of my report) which might be *'moved to suit project requirements'*. This would be normal under Design and Build procurement.

2.2.30 Under the initial appointment to KCTMO there was no suggestion within the appointment documentation of any abbreviation to the overall services to be provided by Studio E 'pre-novation', and I have no knowledge that thereafter the terms of the appointment were amended to permit any such abbreviation.

2.2.31 My understanding is, therefore, that with the possible exception of those items within the RIBA Work Plan {SEA00009824/3} *'that may be moved to suit the project requirements*', of which with respect to the 2012-16 Works the delay to the submission of the Building Regulations application until after the appointment of Rydon is the only issue of which I am aware, a full service commensurate with the Outline Plan of Work was to be provided pre novation in favour of KCTMO for all RIBA Work Stages up to and including Stage F1.

2.2.32 I state within Sections 4 and 5 of my report that it is my view that Studio E's service, in terms of the extent of its design and production documentation for the over-cladding/external wall upgrading, fell well short of the extent of work that I would consider appropriate under the terms of its appointments both pre and post novation stages.

2.2.33 I confirm that during the preparation of my report, I took fully into account the fact that the scope of the various work stage services can vary under design and build procurement. However, as set out above, aside from the delayed submission of the Building Regulations application, I have seen no evidence to suggest that the scope of the services under each of the work stages as was to be carried out for KCTMO under the terms of Studio E's appointment was to be, or should have been, varied or reduced from those described in the RIBA Outline Plan of Work, other than in circumstances anticipated under a Design and Build procurement route which I had anyway understood and allowed for.

Issues arising at the point of novation and transition from KCTMO as Employer Client to Rydon as Contractor Client:

2.2.34 In this respect, and whilst this is a legal issue upon which the Inquiry will decide, it seems to me (notwithstanding Studio E's ongoing responsibilities to KCTMO for past work carried out under that commission) that Studio E's appointment conditions as agreed with KCTMO 'fell away' with respect to the work that it was due to carry out for 'a Design and Build Contractor' at the point of its novation to, and appointment by Rydon – that is RIBA Work Stages F2 / K and L as listed under Appendix D of the KCTMO appointment {SEA00009826}.

2.2.35 Whilst I believe that it is clear, and indeed generally accepted, that an architect remains responsible, post novation, to the 'Employer Client' for any *errors* in its work *as carried out* pre novation, the Inquiry will also wish to consider whether Studio E remained simultaneously liable to KCTMO for the consequences of any *omissions* to its pre-novation work. In that respect I am referring to work that although required under the terms of its appointment to KCTMO, for example under Work Stages E and F1, Studio E simply *failed* to carry out. An example of such an omission would be the larger scale (1:5) detailed drawings that I believe Studio E should have provided in the form of 'typical details' for the window head, sills and jambs and the general strategic planning of the cavity barriers positioning, all as shown within Section 3 of my report under 'Indicative Approach'.

Whilst the RIBA Job Book (Eighth Edition) {INQ00013943} did not specifically list the scale of drawings that would be required under a Design and Build procurement route against each work stage, it clearly called for 'detail work', which I interpret as larger scale (1:5 and larger) detail drawings. I quote from the Job Book as follows:

Re Stage E: (p135)

> '*In design and build procurement with an employer client, the design will be developed to the level of detail previously agreed*. (In this case F1) *It is relatively rare for the employer client to require technical design as part of the Employer's Requirements.*

However, some exploratory detail design is often necessary before the Employer's Requirements can be finished'.

(p151) *'Where an employer client includes a scheme designed by their own consultant team as part of the Employer's Requirements, some Stage E detail work might be relevant. The extent of the commitment should be agreed with the client before work is undertaken'.*

Re Stage F: (p168) *'F1: Prepare detailed information… required for construction'.*

Such 'exploratory detail' is exactly what I have suggested and shown within my Indicative Approach in the form of typical details (i.e. not necessarily every detail but sufficient to establish (explore) and indicate (typical) what is required in order to secure a robust tender, and what is required to achieve compliance with the requirements of Building Regulations that will be applied for post novation). It seems clear to me that that extent of work was agreed under the KCTMO appointment.

2.2.36 In this respect I am referring to shortfalls in the scope of services that Studio E actually provided, against the scope that an architect acting with due care and skill should have provided under the terms of the pre-novation appointment to KCTMO. As stated above, this is a legal issue which the Inquiry will decide upon, but my own opinion is that Studio E did indeed fail to complete all the work that it should have carried out. I quote from the RIBA guidance notes at page 18 of Part 3 of this Supplemental Report:

> *'It is a vital pre-requisite to the change in allegiance that the employer client is clearly the 'owner' of and responsible for the Brief on which the architect/consultant's services were based up to the time of the change* (that is the novation). ***Of course, such 'ownership' will not relieve the architect/consultant of responsibility for performance of the services up to the time of the change****'* (my emboldening and parenthesis).

2.2.37 The RIBA also makes the following recommendation (see page 20 of Part 3 of my Supplemental Report), under ***'Late change to design and build'*** that:

> *'If after the architect is appointed for traditional fully designed procurement, but subsequently and prior to inviting tenders, it is decided to change to the design and build route, the agreement between the client and architect/consultant should also be changed to reflect the very different responsibilities and liabilities of the architect/consultant by:*
>
> - *continuing with the existing agreement and specifying in a (deed of) variation… the services completed and the new (future) services required, together with any consequential or other changes; or*

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- *terminating performance of the architect's services under the existing* (Employer Client) *agreement and entering into a new* (Contractor Client) *agreement'* (my parenthesis).

2.2.38 I assume that the former of the two options outlined in the preceding paragraph would apply in circumstances where the architect is to remain working for the client (who would become the Employer Client) and that another architect would be appointed by the Design Build Contractor who would become Client Contractor to that second architect (that is a combination of Design and Build Options ii) and iv) as set out above).

2.2.39 Whilst this was not the type of Design and Build option that was used for the 2012-16 Works, I mention it because it is indicative of the care with which such issues have been considered by the RIBA, and the importance of clearly identifying the peculiarities of any Design and Build route that is adopted in any particular project.

2.2.40 The RIBA guidance states further at page 18 of Part 3 of this Supplemental Report that:

> *'It is in the nature of these complex arrangements that the parties will wish to protect their own position'*

2.2.41 In this respect it may well be that Studio E did not take sufficient care in its efforts to maintain clarity in terms of its responsibilities, and that accordingly it failed to protect both its own position and that of KCTMO as well as the interests of the project. That is not to suggest that both KCTMO and Rydon did not also fail to protect both their own respective positions and the interests of the project.

2.2.42 Although it will be a matter for the Inquiry to decide, it is my opinion that proper arrangements were not made in terms of the transition of the Studio E appointment from KCTMO to Rydon at the point of novation. In my view there should have been a process followed for 'setting aside' the obligations that Studio E had committed to under its KCTMO appointment with respect to Work Stages F2 to L. Unfortunately, it appears that no such process occurred in this case.

Services that Studio E committed to provide to Rydon post-novation:

2.2.43 Turning now to the post-novation services that were due under Studio E's appointment to Rydon. I have acknowledged within my report that the terms of Studio E's appointment changed significantly.

2.2.44 It seems to me that the Rydon Deed of Appointment replaced the obligations that Studio E had previously held under the KCTMO appointment to carry out Work Stages F2 to L as set out in the KCTMO appointment under 'Specified Roles' (Figure 4.2 of my report).

2.2.45 In this respect whilst Studio E remained liable to KCTMO in terms of its responsibility for all work carried out up to the point of novation under the KCTMO agreement, from this point onwards Studio E's contract was with Rydon and, to quote from the RIBA guidance as contained at page 22 of Part 3 of this Supplemental Report:

> *'When the consultant switch takes effect: the architect/consultant's services are performed for the benefit of the contractor as client to the exclusion of the employer as former client'.*

2.2.46 In this respect, it is also my opinion that whilst the services described under the Rydon/Studio E Deed of Appointment and listed within its Schedule of Architectural services {RYD00094228} took a very different format in their drafting to the services described in the Contractor's Design Services Schedule (see page 6 of Part 3 hereto) they did equate, in terms of scope, reasonably closely to service F2 and those parts of K, together with the Building Regulations submission component of F1, as defined under the Contractor's Design Services Schedule (which is based on and otherwise identical to the RIBA Outline Plan of Work).

2.2.47 Accordingly, it is my opinion that in terms of production and documentation information, and checking of sub-contractor packages, the services outlined in the Rydon Deed of Appointment are similar to those which the RIBA recommends and which I would expect an architect to deliver to a Client Contractor under a Design and Build procurement process (as listed under the Contractor's Design Services Schedule (see Part 3, Appendix A hereto). The RIBA Services include:

> *RIBA Stage F2: 'Preparation of further information for construction required under the building contract'* and
>
> RIBA Stage K: *'Provision to the contractor of further information as and when reasonably required'* and *'Review of information provided by contractors and specialists'*.

2.2.48 A series of other important points arise in this connection:

a) Studio E should have immediately, post novation, carried out an audit/review to ensure that the design and specification as then current, met the Employer's Requirements. This is not only 'good practice' that I would expect of an architect, but it was clearly anticipated in the Rydon/Studio E Deed of Appointment under Item 4 of the Schedule of Architectural Services {RYD00094228/9}:

'Seek to ensure that all aspects of the architectural designs comply with the Employer's Requirement documents prepared by Artelia UK'.

b) Studio E should have immediately, post novation, also carried out an audit/review to ensure that any work listed under those Work Stages carried out prior to novation – that is from inception up to the completion of Work Stage F1 – had been completed. In this way incomplete work outstanding from Studio E's appointment to KCTMO with respect to work stages up to the completion of Stage F1 would at that point have been identified and could have been put in hand in a (relatively) timely manner. Again, this is not only good practice that I would expect of an architect, it was clearly anticipated in the Rydon/Studio E Deed of Appointment under Item 5 of the Schedule of Architectural Services {RYD00094228/9}:

'Advise the Contractor where, in the Architect's opinion, there are shortfalls within the Employer's Requirements and advise of assumptions to be made'.

c) Any re-working of work previously carried out as a result of negotiations at tender stage involving finalising or indeed changing the design /specification as described in the Employer's Requirements tender documentation could then have been identified and put in hand.

d) All such work as resulted from the three headings above, and any future work under the novation to Rydon, should have been carried out to '*the same standard of performance, albeit for the contractor client*' as had been required under the pre-novation appointment to KCTMO (see RIBA guidance at Appendix B hereto).

2.2.49 Whilst it will be for the Inquiry to decide whether the guidance notes offered by the RIBA with respect to Design and Build appointments should be taken into account in terms of determining whether Studio E applied proper care in establishing the terms of its respective pre and post novation appointments, I confirm that I have taken the four duties/principles listed at paragraph 2.2.48 above into account within Sections 4 and 5 of my report when assessing Studio E's performance under the Design and Build procurement route adopted for the 2012-16 Works.

2.2.50 I believe, in the absence of any other guidance, that this is the appropriate basis upon which to proceed in determining whether the work carried out by Studio E under the Rydon appointment met the standards, in terms of technical correctness and adequacy/completeness, as to be expected of an architect acting with reasonable care and skill.

Alleged lack of clarity about the services Studio E were to provide both pre and post novation:

2.2.51 In broad summary, Studio E seems to be suggesting within its Opening Statement that various, albeit unspecified, criticisms that I have made in relation to its performance should be set aside because of an alleged lack of clarity in Studio E's services both pre and post novation. Its Opening Statement suggests the following:

a) That Studio E's scope of services and appointment terms were not clearly defined and that was the fault of others (for example at Opening Statement paragraphs 6.3 and 6.12).

b) That the proper basis for assessing Studio E's work *'must be considered in the context of the actual services provided on the Project and the instructions given to Studio E at the time of the Project'* as opposed to the scope of services that it had committed to provide to KCTMO within the RIBA appointment documentation that Studio E itself prepared, and thereafter, to Rydon under the Deed of Appointment issued by Rydon which Studio E accepted and signed (Opening Statement paragraphs 6.12 and 6.13).

2.2.52 I believe that these points on the part of Studio E are seriously misplaced for two reasons:

a) As set out above, I do not think there was any real lack of clarity about the services that Studio E was to provide either at pre or post novation stages under the terms of its appointments respectively to KCTMO and thereafter to Rydon.

2.2.53 As I have indicated above and will set out more fully below, even if there was a lack of clarity in terms of the services to be provided, it is clearly an absolute duty under both the RIBA and the ARB Codes of Conduct, (both of which applied to those within the Studio E organisation who were members of the RIBA and/or registered with the ARB) to ensure that appointment terms and the responsibilities that flow from them are clearly defined. This is ultimately the responsibility of an architect, as part of his/her professional duty. It applies equally to both pre and post novation in circumstances where an architect is appointed first to an Employer Client and thereafter to a Contractor Client, irrespective of whether the RIBA appointment documents are used for either appointment.

2.2.54 On the basis Studio E had a clear professional duty at both pre and post novation stages to clearly define, record and agree its scope of services and responsibilities, and thereafter to deliver competently and fully against that agreement. It is also my opinion that Studio E had a duty to ensure absolute clarity with respect to whom responsibility would be due in relation to those services in the context of the novation arrangements that applied.

2.2.55 I emphasise this point because not only is the process of novation (as clearly recognised by the RIBA) complex, but because, as described above, there are many different points at which novation can take place against different types of Design and Build arrangements. Clarity around the issue of novation and, in that context, a clear definition of the work to be carried out pre and post novation is of critical importance, and (as I will show) the architect has a clear responsibility in ensuring that such clarity exists.

2.2.56 Indeed, it is precisely because of the complexity of the novation process within Design and Build procurement, and because of the variety of types of Design and Build process that exist, that the architect should take appropriate care to ensure absolute clarity in terms of the services to be performed, both by him/herself and by those other consultants and sub-contractors who are also appointed to the project. This applies at both pre and post novation stages of the procurement process.

2.2.57 Against this background it is my opinion that Studio E's terms of appointment and the responsibilities that flowed therefrom were abundantly clear, firstly for the pre-novation period, as a result of the documents that Studio E itself prepared confirming the appointment with KCTMO and, thereafter, under the Rydon Deed of Appointment which Studio E confirmed acceptance of.

2.2.58 In connection with Studio E's complaint that such documents were not signed or otherwise signed late, that is not a matter that I think can be claimed in mitigation to have caused any confusion in terms of the work to be carried out.

2.2.59 However, even if (contrary to my opinion) confusion as to the terms and validity (signed or not/ signed under duress) did prevail, that is a situation that Studio E should not have allowed to continue under the code of conduct of its registration board, about which I comment below. In this respect I offer further commentary below on the obligations that senior members of Studio E's leadership had with respect to the firm's appointment for the 2012-16 Works.

An architect's duty to establish clear terms of appointment:

2.2.60 All architects within Studio E (LLP and Ltd.) were of course bound by 'The Architects Code: Standards of Professional Conduct and Practice' as published by the Architects' Registration Board (ARB) in 2010. In my opinion those senior architects who shared responsibility for the overall running of the practice – particularly those who had an interest in terms of ownership - had an implicit duty under the ARB Code of Conduct to ensure that appointment terms for all projects undertaken by the practice were clearly set out in writing, and that any variations to those terms subsequently agreed were likewise clearly recorded. It is my opinion that less senior architects would not be so responsible for projects with which they had no involvement. However, such architects would, in my opinion, be responsible in similar fashion under the ARB Code of Conduct for ensuring that any project with which they were involved was properly set up and managed in terms of appointment terms. This, however, is far from clear under the ARB Code of Conduct.

2.2.61 The ARB Code places an absolute responsibility upon an architect with respect to ensuring clarity to the terms of any appointment that it accepts. I quote from Standard 4 of the code as follows:

> '*Clause 4.4: You are expected to ensure that before you undertake any professional work you have entered into a written agreement with the client which adequately covers:*
>
> - *the contracting parties;*
> - *the scope of the work;*
> - *…*
> - *who will be responsible for what;*
> - *any constraints or limitations on the responsibilities of the parties…*

2.2.62 In this respect I further quote as follows:

> *Clause 4.5: Any agreed variations to the written agreement should be recorded in writing.*

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Clause 4.7: You should make clear to the client the extent to which any of your architectural services are being sub-contracted.

2.2.63 Whilst Studio E's suggestion (Opening Statement paragraph 3.1.5(c)) that part of its work should have been carried out by Harley would not amount to 'sub-contracting', in my opinion, ARB clauses 4.5 and 4.7 together make it clear that once appointed no part of the service that the architect has undertaken to provide can be either deleted or in any way passed to others without the prior agreement of the client.

2.2.64 Accordingly, it is my opinion that unless expressly released from any part of its service, Studio E were responsible for delivering that service. It could not pass that duty to others (Harley), nor can it now claim that in circumstances where it failed to deliver those services, its responsibilities with respect to providing those services have simply 'fallen away' and that any liability with respect to that work not being carried out properly now falls to those others who provided those services. That, however, is ultimately a matter for the Inquiry to determine.

2.2.65 The above listed ARB Code requirements applied equally to the initial appointment for the 2012-16 Works under which Studio E LLP was contracted to KCTMO, and to the subsequent appointment whereby Studio E Ltd, post-novation, was appointed to Rydon.

2.2.66 As stated above, my view with respect to Studio E's suggestion that there was a lack of clarity about the terms of its appointment and the responsibilities that arose in that context, is that on the contrary, the documentation was very clear. The responsibilities that it imposed on Studio E in terms of both the pre-novation KCTMO appointment and the post novation Rydon appointment were very clearly laid out. Studio E simply failed to provide adequately against the scope of services as laid out under both of those agreements.

2.2.67 I refer again to paragraph 6.12 of its Opening Statement where Studio E states that its '*performance must be considered in the context of the actual services provided on the Project and the instructions given to Studio E at the time of the Project*'.

2.2.68 It will be for the Inquiry to determine what, if any, value it places on this assertion. However, it seems to me to be untenable that an architect/practice can claim that its performance in terms of scope or standard should be assessed against anything other than the standard of service to be expected of a reasonably competent practice undertaking the scope of services, in their entirety, or as otherwise formally amended, that that architect/practice had undertaken to provide.

2.2.69 Furthermore, I am unimpressed by the suggestion that Studio E were somehow 'press-ganged' into signing the Rydon Deed of Appointment as a result of which it should be set aside (Opening Statement paragraph 6.12). While that is an issue that the Inquiry may have to determine, I note again that Studio E had an obligation under the ARB Code of Conduct to establish the terms of its appointment at the commencement of its work for Rydon. It first received the Deed of Appointment and Schedule of Architectural Services in draft from Rydon on 17 April 2014 {RYD00064706}. On 30 April 2014, Mr Sounes responded to that draft with some suggested amendments {RYD00014215}. Although the Deed of Appointment was not signed until 3 February 2016 {RYD00094228}, I have seen no evidence, written or otherwise, that Studio E demurred from those terms or that those terms were in any way changed from the draft as sent back to Rydon on 30 April 2014 {RYD00014215} during the intervening period.

2.2.70 On the basis of the above, and turning first to the Rydon appointment, it seems to me untenable that Studio E can now claim that their appointment demanded anything less of them in terms of work output and responsibility than that set out in the Deed of Appointment as prepared by Rydon. This is precisely the basis upon which I have prepared my Report, principally at paragraph 4.4 onwards.

2.2.71 Turning to the KCTMO appointment, it is very important that the work for a 'robust' Employer's Requirements tender pack should be well advanced prior to tender in circumstances where competitive prices are to be sought whilst seeking to retain a sensible level of control over appearance and quality and protection against risk and disputes.

2.2.72 In that respect, I am not suggesting that the architect should have produced *'all of the detailed design'* as intimated at paragraph 7.18.2 of the Studio E Opening Statement. It is my clear view, however, that the design should have been substantially developed under the KCTMO appointment with the basic principles already established through indicative sample details and a thoroughly worked up specification. This would accord with the outputs expected under RIBA Work Stage E and F1.

2.2.73 I have not been particularly inclined to criticise Studio E's specification work with respect to the over-cladding under the Employer's Requirement's stage of its work: rather it is the lack of indicative (drawn) details that has concerned me. The task was not great in this respect: 1 to 5 scale details to the head, sill and jamb of a typical window and careful attention to the arrangements around the column and at the Crown was principally what was required.

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2.2.74 Unfortunately, Studio E failed to provide any of these larger scale indicative details, either as part of the Employer's Requirements documentation at pre-novation stage or, it appears, during their subsequent employment with Rydon. This is despite the specific requirement that they should do so as stipulated in the Rydon Deed of Appointment at item 31 {RYD00094228/11}. Instead they appear to have relied both pre and post novation on 1:20 scale drawings which simply did not provide enough information and provided information that was wrong in terms of its failure to meet the guidance of ADB2.

2.2.75 It remains my opinion, as stated in my report, that had Studio E properly investigated these parts of the building through the preparation of an appropriate sample range of 1:5 scale details, preferably at pre-novation/Employer's Requirement's stage but, in the absence of that, certainly under their appointment to Rydon as was required under their Deed of Appointment, some at least of the principal errors and omissions in Studio E's work may well have been avoided.

2.2.76 Whether Harley had a right to rely on Studio E's work as a basis from which to develop its own work will be a matter for the Inquiry to determine, but either way it is clear to me that omissions, and particularly errors in Studio E's own work that occurred during its appointment to KCTMO (for example the error in specifying PIR insulation against the guidance of ADB2, and the omission of cavity barriers to the jambs and sills of windows), remains a failure of duty that Studio E carried initially when working for the KCTMO, and post novation when working for Rydon. This failure 'fed' directly into the shortfalls of Harley's detailed production drawings.

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2.3 Theme B: Issues of design responsibility (Studio E Opening Statement paragraphs 3.1.5 (c), 5(c), 7.10, 7.11, 7.13, 13.6, 13.7 and 15.11)

2.3.1 I seek here to demonstrate that whilst the Design and Build contractor and its cladding sub-contractor both assumed responsibilities for discrete parts of the design and specification work under design and build procurement arrangements, Studio E is wrong to claim within its Opening Statement that such responsibility as it had under both pre and post novation contracts simply 'fell' away to others as a result of that procurement route.

2.3.2 It is not the case that because a contractor, or specialist sub-contractor such as Harley, had responsibility to '*complete detailed design…*' (as referred to under paragraph 12.14 of Studio E's Opening Statement), that this in any way relieved Studio E from its duty to carry out and complete its own design work in relation to the external wall in accordance with its obligations under Work Stages E and F1. I deal with this point more extensively below.

2.3.3 It is also my opinion that any obligation on the part of the sub-contractor to *'complete the design in accordance with the designated code of practice'* (see paragraph 12.14 of Studio E's Opening Statement) does not impose an obligation upon that sub-contractor to undertake a checking role or to assume responsibility for any or all past work of the architect. Further this most certainly does not exonerate the architect for any design failures in its own past work that are not 'picked-up' by the sub-contractor.

At paragraph 7.10 of its Opening Statement Studio E states that design responsibility for all aspects of the project passed to the contractor following novation:

> *'On appointment the Design and Build Contractor takes on the design and construction responsibility and risk for the Project.'*

2.3.4 Studio E also claims at paragraph 3.1.5(c) that my first report:

> '*Ignores, or fails to appreciate, the relevance of the fact that the cladding was, and was always envisaged to be, designed by Rydon's specialist sub-contractor, Harley, which was understood to have assumed responsibility for all aspects of the design of that item'.*

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2.3.5 This clearly implies that Studio E believes that any responsibility which it previously had with respect to producing any external wall/cladding information still outstanding at the point of novation under the terms of its appointment to KCTMO, simply passed from Studio E to Rydon and/or Harley at the appointment of Rydon. In other words, Studio E seem to be suggesting that upon the appointment of Rydon it was (i) absolved of all design responsibility for work hitherto carried out under its appointment to KCTMO with respect to the external wall/cladding, and (ii) released from any obligation to provide any work that remained outstanding or alternatively would be required with respect to the external wall/cladding against its appointment with Rydon.

2.3.6 Whilst this is a legal matter upon which the Inquiry will decide, it is my opinion that Studio E are correct in asserting that under Design and Build procurement design responsibility for work hitherto carried out for KCTMO as incorporated into the Employer's Requirements documentation did indeed pass to the contractor. However, Studio E is quite wrong in its apparent belief that with that assumption of design responsibility on the part of Rydon as Design and Build contractor, Studio E's design responsibility respectively was, and would be, absolved in terms of work done hitherto under its appointment to KTCMO and under novation to Rydon.

2.3.7 In support of this view I offer the following commentary based on the RIBA's guidance note at page 18 of Part 3 of my Supplemental Report:

> '*the [Employer] client will want…the (Design and Build) contractor to be liable to the client for faulty performance by the architect/consultant of Services previously undertaken for the benefit of the client*' (my parentheses in both cases).

2.3.8 It is my experience that acceptance by a Design and Build contractor of liability for the design work of an architect as carried out for the Employer Client pre-novation is common. But, and this point is key, in such circumstances the Design and Build contractor invariably holds the architect responsible on a 'back to back' basis for the design liabilities that the contractor has assumed. This is precisely what was provided for at paragraph 2.2 of the Rydon / Studio E Deed of Appointment {RYD00094228/3}:

> *'... the Consultant acknowledges that it is responsible for all and any design and other work undertaken by the Consultant its employees and servants, sub-contractors or agents in relation to the Site before the date of this Deed'*

2.3.9 And at paragraph 2.3:

> *'The Consultant warrants it **has** exercised and will continue to exercise reasonable skill and care and diligence in the discharge of the Services to the standard reasonably to be expected of a competent professional experienced in the provision of professional services for works similar to the size scope complexity quality and nature of the Development'* (my emboldening).

2.3.10 The RIBA's guidance (see page 22 of Part 3 of my Supplemental Report) states that (following novation):

> *'the architect/consultant's services are performed for the benefit of the contractor as client to the exclusion of the employer as former client'*

and that:

> *'the architect remains liable to the employer client for defaults in services previously undertaken for the benefit of the employer client, but does not owe the employer client a professional duty for the services undertaken for the contractor client'.*

2.3.11 I also draw attention to the RIBA guidance as contained at page 26 of Part 3 of my Supplemental Report, from which I quote:

> '*Novation arises* (as I believe was the case for the 2012-16 Works) *when the Employer Client requires the contractor, as a condition of the building contract, to take over the Agreement with the Architect'* (my parenthesis).

2.3.12 Under such conditions, the guidance notes go on to state that:

> *'Upon novation: the architect becomes liable to the contractor client in respect of the Services already performed and to be performed by the architect/consultant under the Agreement.* (That is, for the services that Studio E had provided to KCTMO).

This is consistent with clause 2.2 of the Rydon/Studio E Deed of Appointment as mentioned above.

2.3.13 Again, I confirm that I have taken the principles listed above into account when assessing the Studio E performance and responsibility under the Design and Build procurement route adopted for the 2012-16 Works. On this basis I believe that the suggestion that all responsibility that Studio E had for producing the outstanding information that it was required to deliver with respect to the external wall and cladding arrangements under its appointments to KTCMO, and thereafter to Rydon, simply fell to Rydon's sub-contractor (Harley) is misplaced. Furthermore, Studio E's suggestion that the design and specification of any and all aspects of the external wall/ over-cladding work that it had hitherto carried out under its appointment to KTCMO also passed to others (either Rydon or Harley) upon the appointment of Rydon as Design and Build contractor, and that in those circumstances Studio E's responsibility with respect to any failures relating to its earlier work on these items simply 'fell away' – contrary to the RIBA's guidance notes (see page 18 of Part 3 of this Supplemental Report) is also misplaced.

2.3.14 I again quote from that RIBA guidance note (see page 18 of Part 3):

> *'It is a vital prerequisite to the change in allegiance that the employer client is clearly the 'owner' of and responsible for the Brief on which the architect/consultant's services were based up to the time of the change. Of course, such 'ownership' will not relieve the architect/consultant of responsibility for performance of the services up to the time of the change'.*

2.3.15 It seems to me that post novation Studio E:

- assumed a direct responsibility to Rydon for all work that it had previously carried out under the KCTMO appointment pre-novation (Rydon Deed of Appointment paragraphs 2.2 and 2.3 {RYD00094228/3});

- retained a direct responsibility to KCTMO for all work that it had previously carried out under the KCTMO appointment pre-novation;

- assumed responsibility to Rydon for all work that it carried out under the Rydon Deed of Appointment (Rydon Deed of Appointment paragraph 2.3 {RYD00094228/3});

- possibly, if a warranty applied, assumed responsibility to KCTMO for all work carried out under the Rydon Deed of Appointment.

Studio E also seem to be implying (for example, at paragraph 13.7 of their Opening Statement) that Rydon and/or Harley had, under their respective appointments, a duty to check all Studio E work as hitherto carried out (at least with respect to the entire external wall upgrading) and as part of that process a duty to correct all and any errors in terms of compliance and technical performance.

2.3.16 As a corollary to the above point, Studio E also seems to be suggesting (for example, at paragraph 13.6 of their Opening Statement) that neither Harley nor Rydon had any right to rely on any of the work with respect to the external over-cladding/ external wall upgrading as previously carried out by Studio E under its appointment to KCTMO in terms of its technical competence or compliance with the Building Regulations and Approved Documents, and that such work was only to be taken/used as a guide to aesthetic intent and appearance.

I am not impressed by either of the above arguments and in this respect, I again refer to paragraphs 2.2 and 2.3 of the Rydon/Studio E Deed of Appointment {RYD00094228/3}.

2.3.17 Studio E seems to be suggesting at paragraph 13.6 of its Opening statement that it had had no duty under the Design and Build appointment to notify Rydon at its point of novation of what, if any, information remained outstanding/ incomplete with respect to the over-cladding against any of the RIBA work stages carried out under the KCTMO appointment up until the point of novation of Studio E. This again is incorrect as the Schedule of Architectural Services contained within the Deed of Appointment clearly shows. For example, at item 5 it states: *'Advise the Contractor where, in the Architect's opinion, there are shortfalls within the Employer's Requirements and advise of assumptions to be made*' {RYD00094228/9}.

2.3.18 Studio E also seems to be suggesting that following that novation it had no duty to provide any further design or detail with respect to the over-cladding work. This again is incorrect as the Deed of Appointment clearly shows. For example, items 28, 31, 31a, and 31(c) of the Schedule of Architectural Services state:

> *'Prepare additional production information associated with the Architectural designs'* (item 28)
>
> *'Provide supplementary notes to drawings and provide further drawings to show sufficient information to construct the project to completion consisting (but not limited to) the following:'* (item 31)
>
> *External wall... construction details (1:20/1/10/1:5)* (item 31a)
>
> *Window jamb / head / cill details (1:20/1:10/1/15)* (item 31c)

(As stated elsewhere the reference to '1/15' should read '1:5')

2.3.19 There is no suggestion anywhere within the Rydon Deed of Appointment that the over-cladding is not included as part of this obligation.

2.3.20 Studio E also seems to be suggesting (for example at Opening Statement paragraph 13.6) that its duty to comment under its post-novation obligations to Rydon in relation to Harley drawings was restricted to matters of 'architectural intent' by which I understand it means matters of aesthetics and appearance only and did not extend to technical or compliance related matters.

2.3.21 I have seen no documentation to support this view, and such a restriction of duties is not consistent with my understanding of an architect's normal duties when receiving and reviewing specialist sub-contractor's information. In this respect I quote variously from the Schedule of Architectural Services of the Rydon/Studio E Deed of Appointment {RYD00094228} which contradicts this view entirely:

> *'Seek to ensure that all designs comply with the relevant Statutory Requirements, including Scheme Development Standards'* (item 8 at page 8)

> *'Examine Subcontractors' and Suppliers' drawings and details, interface details, with particular reference to tolerances and dimensional co-ordination, finish, durability, appearance and performance criteria and report to The Contractor'* (item 27 at page 9)

2.3.22 I make further comments below with respect to the responsibilities as set out under the Employer's Requirements for the 2012-16 Works with respect to the cladding.

2.3.23 The Employer's Requirements do not appear to contain a Design Responsibility Matrix. In addition, post novation it does not appear that Rydon created a Design Responsibility Matrix. Therefore, when reviewing design responsibility for the rainscreen cladding it appears from section H92 of the NBS (upon which the works were tendered and which thereafter formed part the contract documents) that the intention in terms of Rydon/Harley's duties with respect to design responsibility was as follows {SEA00000169}:

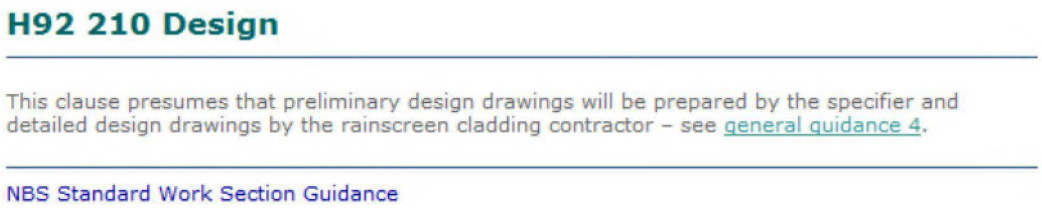
GENERAL REQUIREMENTS/PREPARATORY WORK

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

2.3.24 As is evident from this illustration, the H92/210 clause states under Design:

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

2.3.25 This clearly indicates that Studio E would retain design responsibility for the work that it had done, and that Harley would be responsible for 'building on that work' (that is, *complete the detailed design*) and provide more detailed information as required for the manufacture of components, fabrication and assembly. In other words, the intention was that the detailed design would be completed by the specialist contractor, albeit based on the preliminary design drawings as produced by Studio E. There is no indication whatsoever in this that the Design and Build contractor or its sub-contractor (respectively Rydon or Harley) had either a responsibility to check the broad assumptions and principles upon which Studio E's work had been based, or that Rydon and/or Harley would be absolving Studio E of responsibility for the work that it had done in this connection.



2.3.26 As illustrated below, the NBS provides further guidance for the 210 Design Clause within section 4 of the general guidance. This includes a list of information that can be included on the 'design intent' drawings where appropriate. In this case we can take Studio E and Harley respectively for 'specifier' and 'rainscreen cladding contractor'.

2.3.27 In this case, as indeed in all cases (whether the project is to be delivered by traditional or by design and build procurement), the question of what constitutes and defines the extent of the 'preliminary drawings' (as prepared by the specifier) and the 'detailed design drawings' (as prepared by the rainscreen cladding contractor) is critical.

2.3.28 Under the NBS guidance for clause 210 Design there is further information relating to the drawings and information that can be included (where appropriate) to form the design intent that will be produced alongside the specification.

2.3.29 Exhibited below is an extract from Chapter 4 'Drawings and information'. This is the guidance referred to in the NBS guidance on H92 210 Design as exhibited at paragraph 2.3.26 above:

4 Drawings and information

Rainscreen cladding contributes significantly to the aesthetic of a building. Consequently it is an area where the Architect will normally seek to keep firm design control but not compromise good practice. Design intent should be communicated in contract documentation by preliminary design drawings and a concise specification.

The drawings should show where appropriate:

- Location information together with details of existing and known future adjacent structures.
- Location, extent and material details of all types of background to which secondary support and cladding systems are to be attached.
- Critical faces or locations, dimensioned to relevant grid lines.
- Structural frame (if used) and floor levels with preferred locations and types of fixings and movement joints.
- Critical overall or opening dimensions.
- Critical dimensions should be given as +0/-n or +n/-0.
- Positions of incorporated components, e.g. doors, opening lights, sun screens, louvres.
- Positions of any penetrations.
- Sketch perimeter details, e.g. sills, copings, abutments.

Preparing detailed design drawings at pre-tender stage is likely to be unproductive. With standard systems they may limit competition and with custom systems they may pre-empt solutions for which the manufacturer will not accept liability.

Specification clauses 210, 230 and 235 in this section assign the preparation of detailed drawings to the appointed rainscreen cladding manufacturer or the approved fabricator/ installer. It is important that the contract documentation clearly defines responsibilities for detailed design to ensure that the Employer has redress in the event of failure due to design. Warranty agreements under JCT contracts are discussed in Preliminaries section A30.

2.3.30 In terms of the Employer's Requirements tender package, as produced for the 2012-16 Works, there was one notable omission against the above list in terms of what was provided by Studio E: '*Sketch perimeter details, e.g. sills, copings, abutments*'.

2.3.31 However, whilst the guidance in respect of 'Drawings and information' as it pertains to H92 clause 210 does not specifically state window jambs or head, I would suggest that these are be assumed within the examples provided under the last bullet point of the above exhibit. Such drawings could be provided as rough 'indicative' sketches and could be produced by hand or computer, but would be at a scale that would be clear enough to read (i.e. 1:5 or 1:10) indicating principles and key information that the rainscreen cladding specialist contractor would then base their detailed design on. In other words, very much as shown within my Indicative Approach at Section 3 of my report. That Studio E failed to produce such work remains, in my opinion, a very serious omission and a breach of its duties under the terms of its appointment to KCTMO. It was equally a very serious omission and a breach of its duties under the terms of its appointment to Rydon.

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2.3.32 It will be noted from the exhibit above that the NBS guidance also suggests that *'preparing detailed design drawings at pre-tender stage is likely to be unproductive'* and highlights issues with both standard and custom systems. This should not be muddled up however with the duty of the architect to prepare drawings through which the main principles of the design can be a) worked out (in order for example to ensure 'buildability' and compliance with Building Regulations and Approved Documents) and b) communicated to the tenderer.

2.3.33 Clearly, the architect must strike a balance between, on the one hand, providing a preliminary set of information and design intent drawings that together offer adequate information upon which the contractor can submit a robust tender and which communicates all key interfaces and geometrical relationships that the specialist contractor will need to address (later) when preparing its detail design, and on the other hand not straying into over-prescriptive information which is inappropriate at that stage of a Design and Build procurement process.

2.3.34 The guidance relating to drawings and information as contained in the final paragraph of the exhibit above also indicates the importance of contract documentation defining responsibilities for detailed design.

2.3.35 As stated above, the amount, type and extent of information provided by the architect in relation to the rainscreen cladding specialist subcontractor's design is therefore a balance between communicating the design principles (for example in terms of aesthetics, performance/standards compliance with Building Regulations, dimensional co-ordination at the interface with the adjoining elements of structure and construction), whilst refraining from engaging with levels of detail that the specialist sub-contractor should subsequently develop and be responsible for.

2.3.36 In this respect it is clear there needs to be adequate information to allow the various interfaces to be understood so that they can be suitably developed by the various specialist subcontractors involved. It is my opinion that, at least with respect to the cladding/window/existing structure/internal window lining arrangements, Studio E failed to provide adequate design information, either at pre or post novation stages under their respective appointments to both KCTMO and Rydon.

2.3.37 Studio E did not get this balance right at pre-novation stage which is why key information (such as the necessary extent and arrangement of cavity barriers around windows in accordance with paragraph 9.3 of ADB2) was missing. Having failed to address this at pre-novation stage Studio E then failed (again) to deal with this at post novation stage as was clearly their responsibility. In this respect I quote from item 26 of the Schedule of Architectural Services that formed part of the Rydon/Studio E Deed of Appointment {RYD00094228/10}:

> *'Provide The Contractor with general arrangement drawings, interface details performance specifications and other technical information reasonably necessary to seek quotations from Subcontractors and Suppliers'*

2.3.38 This paragraph should of course be read with item 31 of the same which calls for the provision of:

a. *"... supplementary notes to drawings and provide further drawings to show sufficient information to construct the project to completion consisting of (but not limited to) the following: External wall... construction details (1:20/1:10/1:5)*

b. *Window jamb/head/cill details (1:20/1:10/1:5)"*

The reference to '*supplementary notes to drawings'* in this respect is interesting and appears, as it precedes the subsequent reference (within the same sentence) to '*provide further drawings'* to be suggesting the addition of supplementary notes to drawings provided under the Employer's Requirements tender package.

Against all this the suggestions, as contained in the Studio E Opening Statement, to the effect that Studio E's responsibilities with respect to any other ongoing responsibility for the over-cladding and external wall simply fell away with the appointment of Rydon and Harley with the exception of '*maintaining the architectural intent established at planning and tender stages which covered aspects such as siting, spatial arrangements, amenity, tolerances, dimensional co-ordination, the appearance, proportions, colours or finishes of the products'* (paragraph 13.5 of Studio E Opening Statement) is clearly at variance with the responsibilities as laid out above.

2.3.39 With respect to the information that is to be included within the detailed design, clause 230 of the H92 specification outlines what is required. This clause includes a requirement for:

> '*Proposals to support outstanding applications for Building Regulations consents or relaxations*.' {SEA00000169/68}

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2.3.40 This suggests that the information that is produced by the specialist contractor's detailed design will **support** the information prepared by the architect. But, in my opinion, this does **not** mean that the overarching responsibly for achieving Building Regulations compliance becomes the responsibility of the specialist carrying out the detailed design based on preliminary information.

2.3.41 The H92 specification includes clause 220 (exhibited below {SEA00000169/68}) which outlines the standard that the rainscreen system is to be designed to:

220 **SPECIFICATION:**

- Compliance standards: The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
- Reference information: For the duration of the Contract, keep available at the design office, workshop and on site copies of:
  - The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
  - Publications invoked by the CWCT 'Standard for systemised building envelopes'.

2.3.42 The CWCT 'Standard of systemised building envelopes' as referred to within clause 220 of H92 (and as exhibited below) consists of a series of volumes amongst which Volume 6 refers to the recommended performance of the rainscreen cladding with respect to fire.

These documents have been superseded by a single publication 'Standard for systemised building envelopes', which in nine volumes takes account of the European (CEN) standards dealing with envelope technologies. The nine (10 with 'Standard test methods for building envelopes') volumes are:

- Part 1 Scope, terminology, testing and classification.
- Part 2 Loads, fixings and movement.
- Part 3 Air, water and wind resistance.
- Part 4 Operable components, additional elements and means of access.
- Part 5 Thermal, moisture and acoustic performance.
- Part 6 Fire performance (Not included in the first issue of the standard. To be released after publication of revised building regulations covering aspects of fire).
- Part 7 Robustness, durability, tolerances and workmanship
- Part 8 Testing*.
- Part 0 Specifiers' checklist and certification.
- Standard test methods for building envelopes.

* CWCT issued an erratum sheet dated 26 May 2006 revising the discretionary test sequence clause 8.13.5.

The Standard covers both rainscreen cladding and curtain walling (NBS section H11).

2.3.43 The H92 guidance sets out the requirements and standards that the specialist subcontractor must design to, as well as indicating the detail design information that must be provided to allow fabrication and (at Section H92 clause 230) to 'support any Building Regulations submission' as part of the package based on the prelimiary design drawings of the architect.

2.3.44 Irrespective of whether the procurement route is tradional or design and build the information to be provided by a specialist subcontrator with design responsibility is limited to the ***detailed*** design of the particular element for which it is responsible, as described in the tender documents provided. This detailed design information should be complementary to (as opposed to in lieu of) the level of information that the design consultant (Studio E) was required to provide under the terms of its appointment. Anything outside of that scope will not usually be included on the sub-contractor's detailed drawings as prepared for fabrication. In this respect, if a specialist sub-contractor does include information to allow their elements to be seen in the wider context of adjoining new elements of contruction that lie outside that sub-contractor's 'package', those adjoining elements should be typically shown in notional form, represented by an outline or noted as 'by others'. (An example of this is shown on Harley's drawing at Figures 4.101, 4.102 and 4.103 of my report where Harley show respectively that the head, sill and jamb inner window linings (boards) and insulation behind the inings was to be 'by others').

2.3.45 In the case of the 2012-16 Works Studio E's responsibilities in terms of the scope of work to be provided was, in my opinion, clear with respect to the rainscreen cladding sub-contract package documentation that should have been provided to Rydon. However, Studio E did not provide the full level of information for which it was responsible under the terms of its appointments either to KCTMO or to Rydon. In this respect I offer further commentary as follows.

2.3.46 The design intent of the architect is to provide clarity at these interfaces between the specialist sub-contract 'package' and the adjoining construction. It is important to note that at tender stage the dilineation of the extent of the various sub-contract packages may well not be clear so the architect's drawings should be clearly illustrative of the general arrangements prior to their allocation into the sub-contractor packages that the contractor deems to be appropriate.

2.3.47 In this context, even following Rydon's determination of the scope of the various sub-contractor packages and its decision to place the majority of the external wall work (rainscreen panels/insulation/ cavity barriers / windows and window infill panels) with a single sub-contractor, that sub-contractor did not have design responsibility for all elements of the works that made up the internal construction of the window at head, jamb and sill. Therefore, a detailed drawing for these elements of the works was required to show the design principles of the envelope, to brief the specialist subcontractor for the cladding, and to indicate the arrangements for design of the internal window lining and insulation and packing behind those linings for which the architect was responsible under Stages E and F1 for tendering purposes and under Stages F2 and K during the post novation period.

2.3.48 As I understand it, at the time of the tender, the H92 and L10 sections of the NBS Specification, which formed part of the Employer's Requirements, did not refer to the window units being included within the works of the specialist rainscreen cladding subcontractor. This is evident from the exhibit shown below which is taken from the L10 section. Accordingly, and as these were to be a separate specialist subcontractor design package, a set of primary design intent drawings was required to outline these elements and the interface between the two: that is between the rainscreen package and the 'ribbon' window package. Whilst nothing would appear to turn on this because ultimately the windows (but not the internal linings and insulation behind those linings) were subsumed into the rainscreen cladding package (along with much else) this point again underlines the importance of the work that Studio E carried out in terms of the external envelope being clear

332 **ALUMINIUM WINDOWS FIXED UNIT - ALUMINIUM**
Manufacturer: Wicona - UK. www: http://www.wicona.co.uk
Contact: Stuart Pollard (Specification Manager London)
HBS Centre, Silkwood Park, Wakefield WF5 9TG
M:
T: [redacted]
F:
E: stuart.pollard@hydro.com.

- **Product reference: Wicline 65 evo**
  window assembly to achieve minimum U-value 1.6W/m²K.
- **Finish as delivered: Polyester powder coating.**
- **Panel/ facing type: Aluminium faced insulated panel comprising core insulation, aluminium lining panel and integrated channel profile around perimeter, fully air-sealed at edges to achieve minimum U-value 0.15W/m²K.**
  - **External material: Aluminium panel.**
  - **External finish: Polyester powdercoated. Colour TBC.**
  - **Internal material: Aluminium sheet.**
  - **Internal finish: Polyester powder coated, colour TBC**
- **Panel retention system: Mechanical corner cleats and stainless steel corner braces; EPDM gaskets.**
  - **Beading: Internal snap on aluminium box beads.**
- **Ironmongery/ Accessories:**
  As determined by the sub-contractor to fully complete the installation and interfaces with other installations.
  Including but not limited to: couplings, sill/head/abutment flashings, vapour barriers and air seals. Allow for M&E penetration (for ventilation ducts) where required.
- **Fixing: Galvanised steel frame cramps to masonry/concrete reveal as clause 782.**

and properly thought through at tender stage {SEA00000169/145}.

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2.3.49 It is not unusual for a Design and Build Contractor to obtain prices from multiple specialist subcontractors for various combinations of individual work packages. Therefore, design intent drawings are usually routinely produced in a form that will set out the basic design and specification principles and requirements in order to allow this flexibility of package procurement, as well as communicating the design intent as required to achieve the overall aesthetic and performance standards.

2.3.50 The rainscreen cladding at Grenfell Tower also had interfaces with the roofing system. Again, design intent drawings were required by the architect to outline the overall design principles and to communicate how the interface between the roofing system and cladding was to be articulated in terms of design appearance and technical performance.

2.3.51 As well as setting out design principles and elements of good practice, the architect's detailed design intent drawings allow the works to be priced by the Design and Build contractor and assist in allowing the contractor to define 'work package' responsibility at these interfaces.

2.3.52 As indicated above, it is not uncommon for a specialist subcontractor to have design responsibility for related elements such as the whole façade, as indeed ultimately happened for the 2012-16 Works. This avoids complicated disputes at key interfaces. However, this does not mean that the design intent drawings of the architect are not required: they are important and necessary to outline key design and performance principles that the detailed design work of the specialist contractors will base their work upon.

2.3.53 The format and content of the design intent information, as provided by the architect, should establish these principles. It is typical that in order to indicate key interfaces and junctions the detailed 'intent' drawings are developed at 1:5 scale. This allows the information to be read with clarity and allows enough detail to be incorporated as necessary to describe the work and indicate those elements that are the responsibility of the (various) specialist subcontractor(s).

2.3.54 As stated above, the large-scale detailed 'intent' drawings also allow the architect, with direction from the Main Contractor, to indicate which element (or combination of elements) is to be allocated within the various 'packages' prepared for the specialist subcontractor(s). For example, a 1:5 jamb detail may include a note to state *'cladding rails and fixings by specialist cladding subcontractor'* alongside a note *'window unit and EPDM seal by specialist window subcontractor'.*

2.3.55 The elements of the design may be split as described above into separate works packages, or as occurred under the 2012-16 Works, may be combined into a single package that included all the work with the exception of the inner window linings and related fixing, insulation and package works. Without a large-scale drawing that illustrates the proposals clearly the key principal design information cannot be adequately communicated.

2.3.56 Following the appointment of Rydon, Studio E were novated and appointed under agreed terms and responsibilities for stages F2 onwards. As exhibited below {RYD00094228/11}, under the Schedule of Architectural Services item 31 from the Rydon Deed of Appointment, there was requirement for Studio E to (as indicated):

31. Provide supplementary notes to drawings and provide further drawings to show sufficient information to construct the project to completion consisting (but not limited to) the following:-

a. External wall / internal wall and partition construction details (1:20/1:10/1:5).
b. External wall / ground floor junction details (1:20/1:10/1:5).
c. Window jamb / head / cill details (1:20/1:10/1/15).
d. Door schedule
e. Window schedule
f. Ironmongery schedule in conjunction with contractors ironmongery supplier.
g. Finishes / decorations schedule.
h. Kitchen plans and elevations (1:20).
i. Bathroom plans and elevations (1:20).
j. Stair details including half landings.
k. Duct and fire stopping details.
l. Rainwater pipe locations.
m. Soil stack locations.
n. Service duct locations both horizontally and vertically (ie. kitchen extracts).
o. Roof and eaves details.
p. Flat roof construction details.
q. Sanitaryware schedule.
r. Service routes and entry points.
s. Sloping abutment / horizontal abutment details.
t. Clear detailing of DPC's DPM's at junctions/change of levels and at other non-standard situations.

2.3.57 Once the specialist subcontractor's detailed design is underway and information is issued for review, the architect's preliminary design information is used as a basis for the review.

2.3.58 The specialist subcontractor will base its information and detailed design upon the architect's design intent drawings. Therefore, if the design intent drawings are not robust and contain inaccuracies, omissions, errors, non-conformities, or unknown elements that have not been suitably explored in detail, then it is likely that these same errors and omissions will be replicated in the specialist subcontractor's detailed drawings.

2.3.59 Essentially, therefore, Studio E's design intent drawings should have served as a reliable basis to check the cladding subcontractors detailed design in terms of the principles of compliance with the Building Regulations and Approved Documents, general technical proficiency, and completeness in terms of the interfaces between the separate elements of work. All of that was required in order to comply with the following paragraphs of the Schedule of Architectural Services as set out in the Rydon/Studio E Deed of Appointment {RYD00094228/11}.

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

2.3.60 It is my opinion that Studio E's failings with respect to the KCTMO and Rydon commissions combined with the errors that they made within the work that they did provide, represented a standard of service that fell below that expected of an architect applying a reasonable level of care and skill.

2.4 Theme C: That in preparing the 'Indicative Approach' as contained within Section 3 of my report I have ignored '*the circumstances within which Studio E was operating*' and have not taken into account '*contemporaneous examples of the approach of a reasonable body of the profession*' or that compliance with the Approved Documents was '*not mandatory*' (Studio E Opening Statement paragraphs 8.12.1, and 8.12.2 a, b, and c, 8.16, 9.7 and 9.8)

2.4.1 In paragraph 8.12.1 of Studio E's Opening Statement, I note the reference to the comment at paragraph 3.1.11 of my report where I stated that (due to the necessity for confidentiality in the preparation of my report to the Inquiry) I did not, in developing my Indicative Approach, seek the advice of other consultants, Building Control Officers, specialist sub-contractors etc. in circumstances where such advice would normally be sought. However, this is to miss the point of the exercise: I believe that the Indicative Approach, as set out under Section 3 of my report, meets the following objectives.

2.4.2 In anticipation of Section 4 of my report, the Indicative Approach at Section 3 seeks to demonstrate the 'process' that an architect, acting with reasonable care and skill, would typically go through in an exercise of this kind: that is in preparing a 'robust' set of Employer's Requirements for use in a Design and Build tender process. That process is as shown in the 'Contents' list to Section 3.

2.4.3 This, and I emphasise this point, is not an exact science, and there is no absolute methodology that I know of that sets out a definitive working plan.

2.4.4 But, amongst the available guidance, the architect has recourse to, the RIBA Outline Plan of Work as set out under Figure 4.3 of my report and the RIBA Job Book (Eighth Edition published 2008 and Ninth Edition first published June 2013) and of course his/her own architectural training.

2.4.5 For example, against the bullet points under '*Design and build documentation / Employer's Requirements*' on page 108 of the RIBA Job Book (entitled Supplementary Material c/SM1: Design and build documentation) and whilst acknowledging that *'The amount of information to be included in the Employer's Requirements can vary enormously'*, the Job Book goes on to state that *'With a more complex problem, or a design that needs sensitivity of detail, the Employer's Requirements might extend to a full scheme design'* {INQ00013943}.

2.4.6 The Job Book then goes on to list such information as might be typically required for a more complex problem, and/or one that needs such sensitivity of detail. I think that the over-cladding component of the 2012-16 Works fell into that category.

2.4.7 Amongst the information listed ('Supplementary Material C/SM1: Design and build documentation/ Employer's Requirements') the RIBA Job Book states (at page 108 / Bullet Point 12): '*Reports on other statutory consultation*'. It is notable that this is under RIBA Work Stage C. Accordingly, it possibly assumes a very early Design and Build tender process, but either way, this reference to statutory consultation (which is clearly a reference to Building Regulations, as planning permission is dealt with separately within the preceding bullet point) is indicative of the kind of work that should have been progressing in Studio E's office in the run-up to the issue of Employer's Requirements for tender purposes.

2.4.8 It is my view that had such consultation been properly prepared for and properly carried out, the scheme design that Studio E developed as early as Stage C would have been properly informed with respect to the requirements that the insulation to be incorporated within the cavity behind the rainscreen should be of 'limited combustibility'.

2.4.9 I acknowledge that at page 109 (still with reference to Work Stage C) the RIBA Job Book also states:

> *'It is generally accepted that too specific an approach over design and constructional matters, or the specifying of proprietary systems and materials, may reduce the contractor's design liability in the event of failure'*.

2.4.10 But that is not, I suggest, to in any way intimate that the basic principles of the design should not be properly 'sorted', as indeed they must be if the Employer's Requirements are to form a 'robust' tender package based on substantial work (all work stages up to and including F1) as was clearly intended for 2012-16 Works at Grenfell Tower.

2.4.11 At page 115, under guidance notes for Work Stage D, the RIBA Job Book states that:

> *'As lead consultant, the architect will need to be satisfied that there are no insurmountable problems ahead concerning the integration of the consultants' proposals into the overall design concept.'*

An example of such a problem would be Studio E's failure to select appropriate insulation for the rainscreen cladding cavity, which resulted in an inadequately dimensioned void and wrongly positioned secondary steelwork and external cladding (as compared to what would have been required to accommodate insulation compliant with the Building Regulations) as occurred under the 2012-16 Works).

2.4.12 Also, at page 115 of the RIBA Job Book it states that:

> *'With design and build, where the architect is acting for the employer client* (as was the case at this stage with Studio E in relation to KCTMO) *Stage D might cover design formulation to the extent necessary for inclusion as part of the Employer's Requirements'* (my parenthesis).

2.4.13 At page 135 under guidance notes for Work Stage E, the RIBA Job Book it states that*:*

> *'In design and build procurement with an employer client… it is relatively rare for the employer client to require technical design as part of the Employer's Requirements. However,* ***some exploratory detail design is often necessary before the Employer's Requirements can be finalised'*** (my emboldening).

2.4.14 Clearly, in the case of the 2012-16 Works 'technical design' was required as there was no qualification under the terms of the KTCMO/Studio E appointment (see again (RIBA) Appendix D {SEA00009826}) to suggest that all or any part of Stage E would be novated to the Design and Build Contractor.

2.4.15 Whilst requiring technical design (Stage E) prior to novation might be 'relatively rare', on this project those requirements were absolutely clear and Studio E not only accepted them, they had both proposed them (Mr Sounes' letter of 11 November 2013 to Peter Maddison KCTMO {SEA00009821}) and agreed their fees against the scope of work that would be involved. That said it is also to be noted that, in any event, any part of Stage E (or F1) not carried out pre-novation would implicitly be required to be delivered under the terms of Rydon's post novation appointment.

(As an aid for the Reader I give guidance below to the terms detailed design, technical design, production information and shop drawings: all terms commonly used within the construction industry:

- <u>Detailed design</u> (usually prepared/provided by consultant design team): drawings which define spatial organisation (plans/sections/elevations) and indicate principal structure and forms of construction.

- Technical design (usually prepared/provided by consultant design team): drawings which give information that is adequate to describe the elements of construction in sufficient detail to establish fitness for purpose, buildability and in principle compliance with Building Regulations.

- Production Information (usually prepared/provided by consultant design team): drawings and specification information sufficient to enable a project to be constructed – this would include product, component and materials information sufficient for ordering/buying purposes and dimensional information sufficient for installation of all elements of construction.

- Shop drawings (usually prepared/provided by specialist sub-contractor/supplier): information used to manufacture pre-formed/pre-fabricated components/elements of the building that will be prepared off-site).

2.4.16 In this context, and as all competent architects know, it is only through exploring the details at a larger scale that many of the design problems that must be solved (including those of both an aesthetic and technical nature) can be identified.

2.4.17 In some situations, architects will develop such large-scale details in rough sketch format as a basis for exploratory conversations with manufacturers and specialists at pre-tender stage in order to inform the work and discussions as they proceed. In this way the various 'interfaces' between design elements and work packages can be explored so as to inform the specification and smaller scale drawings as they are developed. This is routine practice amongst architects. I do not know whether Studio E carried out such exploratory sketch work, but I have seen no evidence that they did so.

2.4.18 At page 151, under guidance notes for Work Stage E of the RIBA Job Book {INQ00013943}, it states that:

> *'Where an employer client includes a scheme devised by their own consultant team as part of the Employer's Requirements, some Stage E work might be relevant. The extent of the commitment should be agreed with the client before work is undertaken'.*

2.4.19 At page 152 of the RIBA Job Book, in stating that:

> *'Stage E, insofar as it might be relevant for an employer client, will probably apply mainly to the development of the Employer's Requirements'*

offers a pretty severe waning:

> *'Once the contract has been let, any changes in these are likely to be costly and weighted heavily in the Contractor's favour'.*

This is probably precisely why Mr Sounes recommended a full appointment to Studio E up to the conclusion of stage F1, and precisely why KCTMO were willing to accept that recommendation and accordingly appoint their architect on that basis: they intended to maintain design control against a robust set of contract documents.

2.4.20 At page 195, under guidance notes for Work Stage G of the RIBA Job Book, it states that:

> *'... Stage G may follow Stage C with Stages D-F occurring after the contract is let and sometimes during construction'.*

(In this respect see also earlier commentary within Theme A of this Supplemental Report which seeks to explain such 'out of sequence' working in the context of Design and Build procedures).

2.4.21 As is evident from the above, and from the earlier Theme A commentary, the architect must carefully judge the appropriate level of information to incorporate into the Employer's Requirements tender documentation. On the one hand, as stated under the previous theme's commentary, it should not be too prescriptive for the reasons set out above. Too prescriptive a package may also impact adversely on the competitiveness of tender returns. Conversely, and again as set out above, enough must be included to avoid claims for additional payments and extensions of time against changes.

2.4.22 The most critical factor is at *what stage* the Employer's Requirements are to be issued. Early at, say, the end of Stage C, at some time thereafter up to Stage E, or after Stage F1? As Mr Sounes made clear in his oral evidence and in his witness statement at paragraph 241, the latter was the case in respect of the 2012-16 Works {SEA00014273/105}.

2.4.23 The choice was ultimately down to the project team – most notably Artelia as Employer Agent and Studio E as Lead Consultant - and KCTMO as client. For whatever reason it was decided that Employer's Requirements would be issued at a late stage, i.e. the end of F1 {SEA00009826} which necessitated that the documentation should be 'robust'. This in turn required the basic design to be well advanced and appropriately 'worked up'.

2.4.24 Focusing solely on the over-cladding work I have endeavored, through the Indicative Approach in Section 3 of my report, to:

a) Demonstrate and show *how* an architect would set about developing such a design in circumstances where his responsibilities for that work would be to the Employer Client, and he would remain responsible to the Employer Client even after his novation to the Contractor Client (to whom he would also be responsible for the pre novation work). In this respect I use the Indicative Approach to offer an insight into *'process'* which I believe the Inquiry will find useful as it is, in my opinion, not helpful to the Inquiry's purpose if the typical working methods of the architectural profession is shrouded in mystery.

b) Show what kind of information and what extent of information beyond that included in the Studio E Employer's Requirements package would be required and would, in my opinion, be provided by an architect working with reasonable care and skill in the preparation of a 'robust' Employer's Requirements tender documentation based on information up to and including RIBA Work Stage F1.

2.4.25 This is all very complex territory which is why I thought that it would be helpful to include the Indicative Approach as a 'vehicle' to show where Studio E's documentation would have had to be amended in order to achieve compliance with the Building Regulations and Approved Documents. With respect to the comment under paragraph 8.12.2(a) of Studio E's Opening Statement, in Sections 4 and 5 of my report, I address and, where appropriate, criticise what Studio E did with respect to the over-cladding work. I hope that the Indicative Approach assists the Reader in understanding the criticisms contained in Sections 4 and 5 of my report. It forms a comparator against which those failings on the part of Studio E can be assessed. The Indicative Approach provides a guide to the 'process' that an architect might go through in preparing such work. It sets out the kind of product in terms of design arrangement that should have been developed in order to achieve compliance with the Building Regulations and Approved Documents. It explains the scope and extent of information that I suggest would comprise a 'robust' Employer's Requirements tender package appropriate for up to, and including, Work Stage F1.

2.4.26 Against this last comment, I am certainly not proposing that all the information as contained in Section 3 would necessarily be replicated within a 'robust' Employer's Requirements tender package. I am however clear that the kind of work in terms of its focus and scope that is illustrated within Section 3 would be required to properly 'inform' the preparation and content of such an Employer's Tender package as was required under Studio E's appointment to KCTMO.

2.4.27 Studio E comments (at paragraph 8.16 of its Opening Statement) that '*Rather than taking the Indicative Approach*' it would have been 'more helpful' for me to provide *'contemporaneous examples of the approach of a reasonable body of the profession'*. I assume this to mean the approach of architects operating within a similar Design and Build procurement route with rainscreen over-cladding to residential tower blocks who had agreed to provide at least Stages C-F1 documentation pre novation. I make the same point herewith as is made under Theme D below: it would have been impractical, and indeed it was not part of my instructions, for me to investigate and provide '*contemporaneous examples of the approach of a reasonable body of the profession'*.

2.4.28 Even if I was to be presented with such a body of evidence, for example evidence that many other over-cladding projects to existing residential tower blocks in the UK revealed widespread failures to meet the requirements of the Building Regulations and Approved Documents, I would remain equally critical of Studio E (as indeed I would be of any and all other practices who failed in a similar fashion).

2.4.29 Furthermore, I note the comment under paragraph 8.12.2 of Studio E's Opening Statement to the effect that my Indicative Approach (is):

> '*entirely ignoring the circumstances in which Studio E was operating, including its other responsibilities…*'

If by this remark the suggestion is that any heavy workloads elsewhere on the project ('*other responsibilities*') offer mitigating circumstances which I should have taken into account in assessing the performance of Studio E with respect to the over-cladding element of the work, then I would reject that. The standard of work to the over-cladding should have been consistent with the scope of duty as defined under the architect's appointment and the appropriate standard of care expected of an architect for that work, irrespective of any other pressures elsewhere on that project, or indeed on any other project.

2.4.30 In conclusion, I think it is misplaced of Studio E to suggest, as it has in its Opening Statement, that the circumstances within which it operated provided any reason for its failure to provide the services that it was due to provide under its pre and post novation terms of appointment and in line with the kind of guidance that I have offered within the Indicative Approach as contained within Part 3 of this Supplemental Report.

2.5 Theme D: That I have failed to apply standards of care and skill based on expectations '*at the relevant time*' (Studio E Opening Statement paragraphs 3.1.4, 3.1.5(a), 8.8 and 8.16).

2.5.1 I explain the basis upon which I have given my opinions, with respect to the standard of architectural service as provided by Studio E, at Section 2.3 of my Report, Setting the 'Bar' for criticism.

2.5.2 At paragraph 2.3.16 of my report I stated that I would apply the standard that I would 'expect of a reasonably competent architect's practice' (as opposed to a reasonably competent (individual) architect).

2.5.3 Earlier in that section of my report, at paragraph 2.3.14, I had stated that the leaders of architecture firms should:

> '*ensure that they build a 'balanced' team with the appropriate variety of experience, as needed to deliver any project with which they allow their firm to become involved*'.

2.5.4 I cannot overstate the importance of that point in terms of professional duty. In circumstances where a practice deems that it does not have the 'bandwidth' in terms of experience that will be needed for a particular job, and/or the quantum in terms of resource and manpower that will be required to deliver it in safe and timely manner, then that practice must ensure that it will be able to secure such experience and manpower as will be required to properly service the project in accordance with the terms the appointment before it accepts the commission. That is a simple matter of professional duty with which I believe there can be no dispute.

2.5.5 In terms of 'bandwidth' the Studio E Opening Statement places heavy emphasis (for example at paragraphs 12.7, 12.11 to 12.13, 12.15 and 12.16 to 12.18) on its entitlement to rely on the advice and expertise of others. In this respect it mentions within these paragraphs Max Fordham, Exova, Rydon, Harley and Celotex. Of particular importance is Studio E's statement at paragraph 12.17 which I quote as follows:

> '*Studio E relied on the advice of the appointed specialists and suppliers that the products being considered were suitable for the intended purpose and Studio E considers it was reasonable and appropriate for it to do so*'.

2.5.6 Whilst I fully understand that construction involves teamwork between both individuals within companies and across different companies that are independently appointed, in my opinion, an architect cannot in circumstances of failure offer as mitigation the fact that he/she had relied upon, and indeed accepted, the advice of others where that architect should have either known, or routinely discovered through research and/or interrogation, that such information or advice was wrong.

2.5.7 Indeed, this goes to the very heart of the issue of reasonable care and skill, and the question that I asked myself during the preparation of my report, and which I have given very considerable thought during the preparation of this Supplemental Report, namely what level of reliance was Studio E entitled to place, at that time, on the advice of others in the application of its own duty with respect to reasonable care and skill during the design, development and installation of the 2012-16 Works for the over-cladding .

2.5.8 At paragraph 8.2 of its Opening Statement, Studio E states that the standard of '*reasonable skill and care must be in accordance with a responsible body of opinion of architects*'. It also states in paragraph 8.2 that:

> *'If an architect can show that there is a 'logical basis for the body of opinion in accordance with which the defendant acted' the architect should not be held negligent'.*

2.5.9 Under the above comment Studio E appear to be implying that if it can be shown that a significant number of other buildings, similar in use and design to Grenfell Tower, have been upgraded with similar over-cladding arrangements carrying similar failures, then that standard of design (irrespective of those failures) should be accepted as being consistent with the standard to be expected of an architect carrying out its work with reasonable care and skill. This will be a matter for the Inquiry to decide upon, but I add the following comment for the Inquiry's consideration.

2.5.10 It would have been impractical, and indeed it was not part of my instructions, for me to investigate and provide *'contemporaneous examples of the approach of a reasonable body of the profession'* for this kind of work (as has been suggested at paragraph 8.16 of Studio E's Opening Statement). On that basis I simply do not know in any detail what had, at the time of the Grenfell fire, been done elsewhere although I am aware that widespread problems have been reported, as suggested at paragraph A1.4 of the RIBA Expert Advisory Group on Fire Safety's report (19 October 2017) submitted to Dame Judith Hackitt during her review. How similar the various pieces of design work relating to any such problems are to the work that Studio E carried out for Grenfell Tower, I cannot know. As previously stated, even if I was to be presented with such a body of evidence – for example evidence that many other over-cladding projects to existing residential tower blocks in the UK revealed widespread and basic failures to meet the requirements of the Building Regulations, such as are evidenced within the work of Studio E, at Grenfell Tower, I would remain equally critical of Studio E.

2.5.11 In making the above comment I am asking myself what *should* at the time have been expected of a reasonably competent architect in this matter.

2.5.12 In contemplating the performance of Studio E, it is in my opinion not sufficient to appeal to endemic failure within other cohorts of, or widely across, the architectural profession. If the failures of Studio E in applying the Building Regulations and the guidance of ADB2, are found to be consistent across the entire architectural profession, then the profession in its entirety should be equally criticised.

2.5.13 I take this view because in my opinion the public have a right to expect a standard of reasonable care and skill from those entitled to practice as architects within the UK. That standard of care should be consistent with the ability to apply Schedule 1 Part B of the Building Regulations with reasonable competence in the work that is carried out. I remain firm in this view in the full knowledge of the criticisms of the regulatory process as made by Dame Judith Hackitt and the criticisms made of the Building Regulations and Approved Document B2 as made by the RIBA's Expert Advisory Group on Fire Safety.

2.5.14 There is one exception to this view that I make clear in my report (at paragraphs 3.6.7, 3.6.10, 3.6.11, 4.4.48, 4.4.89 and 4.4.90): insofar as the advice of ADB2 fails to meet the requirements of the Building Regulations, which in my opinion ADB2 so failed with respect to the guidance given at Diagram 40 (through its reference to a product with a Class 0 (national class) being satisfactory for use as an external wall surface), then an architect should not in my opinion be criticised. As stated in paragraph 4.4.89 of my report, it is my opinion that an architect *'should be able to rely on the Approved Document guidance as being adequate to meet the requirements of the Building Regulations'.*

2.5.15 I offer the comment above as evidence that, contrary to Studio E's apparent belief, I have not used hindsight when preparing my report with respect to the appropriate standard of reasonable care and skill that should be used in this case.

2.5.16 With respect to the PIR thermal insulation as specified by Studio E for the cavity to the rainscreen cladding, as I have explained in my report and confirm in this Supplemental Report, it is my opinion that despite the criticisms levelled by both the Hackitt Report and the RIBA's Expert Advisory Group, ADB2 is both sufficiently clear in terms of guidance, and correct in that guidance as given, that no competent architect acting with reasonable care and skill would have specified a product that failed to meet the requirements as stipulated within ADB2 for a material of 'Limited Combustibility'. The essential qualification to this point being that this assumes that the architect chooses the linear approach to demonstrating compliance with the requirements of the Building Regulations (i.e. compliance with 12.6-12.9 of ADB2) as opposed to any other method of demonstrating compliance including the alternative method in 12.5 of ADB2.

2.5.17 In expressing this opinion, I draw attention to one important aspect of ADB2: under 'External wall construction' at paragraph 12.5 which states:

> *'The external envelope of a building should not provide a medium for fire spread if it is likely to be a risk to health or safety. The use of combustible materials in the cladding system and extensive cavities may present such a risk in tall buildings'.*

2.5.18 Paragraph 12.5 goes on to state:

> *'External walls should either meet the guidance given in paragraphs 12.6 to 12.9 or meet the performance criteria given in the BRE Report 'Fire performance of external thermal insulation for walls of multi storey buildings (BR 135) for cladding systems using full scale test data from BS 8414-1:2002 or BS 8414 -2:2005'.*

2.5.19 In suggesting this alternate option for achieving compliance with the guidance of ADB2 with respect to meeting the requirements of the Building Regulations, ADB2 is clearly 'opening the door' to other possible solutions outside the guidance given under its paragraphs 12.6 to 12.9, provided such other solutions meet the performance criteria given under BR 135 '*using full scale test data from BS 8414-1:2002 or BS 8414 -2:2005'.*

2.5.20 I have seen no evidence that Studio E opted for such an alternative route, and I have seen no evidence to suggest that if subjected to such testing, the wall assembly as proposed by Studio E, and generally as adopted within Harley construction documentation and thereafter built, would have met the stipulated criteria.

2.5.21 I comment likewise with respect to the insulation contained within the Window Infill Panels which, although not specified by Studio E, should have been commented upon and corrected during their checking role with respect to Harley drawings and information.

2.5.22 I also comment likewise with respect to the extent and detailing of the cavity barriers as shown on Studio E drawings.

2.5.23 In all these respects, and throughout my report and my work for this Inquiry I believe, contrary to the suggestion of Studio E in its Opening Statement, that I have applied an appropriate standard of reasonable care and skill without hindsight, as instructed by the Chairman to the Inquiry.

Studio E Second Theme Group

My broad interpretation of Studio's Opening Statement as relating to Themes E, F and G are:

Theme E: That the Regulatory System was 'Not Fit for Purpose' and that the Building Regulations and Guidance as contained within ADB2 were inadequate in relation to the use of combustible materials on the external surfaces of high-rise buildings.

Theme F: That there were 'Four Routes to Compliance' and that Studio E's work should not be considered/assessed against the guidance of Approved Document B2 with respect to meeting Part B of the Building Regulations.

Theme G: That the Regulatory System permits the use of combustible materials.

I comment on each of these themes in detail below.

2.6 Theme E: The Regulatory System's fitness for purpose (Studio E Opening Statement para 3.1.1)

2.6.1 Having read both Dame Judith Hackitt's interim and final reports entitled 'Independent Review of Building Regulations and Fire Safety', and the RIBA Expert Advisory Group on Fire Safety's report (19 October 2017) as submitted to Dame Judith Hackitt during her review, I am well aware of the wide ranging criticisms that have been levelled in this respect against the regulatory process within England and Wales. I share many of these criticisms and have others of my own, especially with respect to the many instances within ADB2 of what I consider to be very poor drafting. One such example is the title page to Diagram 40 which reads: *'Provisions for external surfaces **or** walls'* which I suggest should read '*External surfaces **of** walls'* (my emboldening).

2.6.2 With respect to Studio E's comment at 3.1.1 of its Opening Statement (which may be based on the quote at paragraph 2.1.12 of my report) that the '*relevant regulatory system "was not fit for purpose"*', the relevance of this point is ultimately a matter for the Inquiry. So too is the subsequent comment by Studio E at paragraph 3.1.1 of its Opening Statement that (the regulatory system) *'had permitted the routine use of unsafe cladding materials (on) buildings for many years'.*

2.6.3 Part of the Inquiry's work is recommending changes to the guidance given to the construction industry through the Approved Documents. Such matters are not the focus of this Supplemental Report and so I put that aspect aside for now. The point raised by Studio E which must be addressed within this report is whether in its work for this project Studio E was unable to achieve compliance with the relevant regulatory regime because the regime was unworkable due to its deficiency.

2.6.4 It is my duty to give my opinion on Studio E's performance in the context of the regulatory regime as it was at the time that Studio E did its work on the Grenfell Tower Project. I have sought to assess the performance of Studio E against how a practice of architects using reasonable care and skill should have interpreted the Building Regulations and, insofar as they are relevant, the guidance of the relevant Approved Documents as the latter stood at the time of the 2012-16 Works being carried out.

2.6.5 I include compliance with the guidance in ADB2 as part of my assessment of the performance of Studio E in terms of 'reasonable care and skill' because, as stated elsewhere, I have seen no evidence that Studio E ever opted for an alternative route to the guidance as offered through ADB2 with respect to its compliance with the Building Regulations in the design of the over-cladding arrangements.

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2.6.6 In this context, and notwithstanding the commentary and criticisms of the regulatory system, and any changes to it that may flow from those criticisms, it is in my view untenable for Studio E to suggest, if I have understood their point correctly, that the alleged unfitness for purpose of the regulatory system can be used to excuse or absolve every irregularity and failure on the part of Studio E during the 2012-16 Works. That however will be a matter upon which the Inquiry will decide.

2.6.7 It is necessary, when dealing with a project such as Grenfell Tower 2012-16 Works, to prepare a Fire Strategy Report. This is used in discussions with Building Control and with the Fire Authority as the design develops, and the report itself is revised as that process evolves until ultimately, in its mature version, it forms an essential part of the Building Regulations application.

2.6.8 The Exova Fire Strategy Report (the "Outline Fire Safety Strategy") for this project was issued three times and upgraded on each occasion. The Building Regulations application, signed by Mr. Sounes albeit undated, seems to have been made on 4 August 2014 – see paragraph 5.4.4 of my report.

2.6.9 The introduction to the Exova report lists the proposed work to Grenfell Tower. Nowhere in this listing is the over-cladding mentioned either specifically or generally. The report does not list the scheme design drawings to which it is purportedly reporting. I find these omissions to be disturbing. In my opinion Exova should have been unwilling to release the report without these details. Studio E as Lead Consultant and Design Architect should have been unwilling to accept it in such a form and Building Control should have been unwilling to receive it in such a form.

2.6.10 Key within that document, in each of its iterations, is the statement exhibited at Figure 5.16 of my report from which I again quote for the Reader's convenience:

> '*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 concerned by an analysis in a future issue of this report'.*

2.6.11 Under Statutory Considerations the Exova Outline Fire Safety Strategies state:

> '*Compliance with these requirements (B1, B2, B3, B4 and B5 of The Building Regulations 2010) is normally achieved by meeting the standards contained in Approved Document B (ADB2) and/or BS 9991'.*

2.6.12 Thereafter, I have seen no further reference as to whether ADB2 and/or BS9991 was adopted. There is no evidence of any fire engineering study or fire testing of any mock-up wall cladding/wall section having been obtained. If these alternative routes to compliance with the Building Regulations had been adopted by Studio E then the same would have been well documented.

2.6.13 It is for this reason that I have throughout maintained the view that an architect using reasonable care and skill would normally have based his design on the linear route in ADB2. I have seen no evidence that, in this case, Studio E intended to adopt any other alternate route to compliance.

2.6.14 In this respect I do not think that it is adequate for Studio E to claim, as it does repeatedly in its Opening Statement, that because other options for demonstrating compliance with the requirements of the Building Regulations existed (a point with which I agree) we should accept that the wall over-cladding arrangement that Studio E designed and specified could have been endorsed by some such option, so as demonstrate compliance with the requirements of the Building Regulations.

2.6.15 The point is simple in this respect: Studio E offered no such evidence of any other route. No proof of satisfactory design arrangement for the over-cladding in terms of compliance with the requirements of the Building Regulations was provided at the time of construction to Building Control, none has been provided since and none is available now.

2.6.16 The default position is that, in the absence of any advice to the contrary, Building Control would routinely have determined that the proposals were to be considered under the linear route within ADB2 in terms of compliance with the requirements of the Building Regulations. Accordingly, it must in my opinion be appropriate that it is against the (then prevailing) Building Regulations and that guidance in ADB2 that I assess the comment by Studio E that the *'relevant regulatory system was not fit for purpose.'*

2.6.17 As I state below, the criteria I have applied in considering that comment is: are the Building Regulations appropriate and clear in terms of their requirements? And is ADB2 appropriate and clear in terms of its guidance?

2.6.18 As my report clearly states, it is my opinion that the Building Regulations were indeed clear with respect to functional requirements B3 and B4. The facts are in my view incontrovertible: if the stipulations therein had been met, the fire would not have spread so far and so fast.

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2.6.19 With respect to ADB2, I remain of the view that whilst many, including me, have many criticisms and recognise that it is in many parts difficult to use, the guidance nevertheless was sufficiently clear to be used with satisfactory outcome, and appropriate in all aspects, except with respect to the standards of performance stipulated for the cladding as set out in Diagram 40. As I have made clear in my report it is my view that in this respect ADB2 did not meet the requirements of B4 of the Building Regulations. As far therefore as ADB2 is concerned, I believe that with respect to the guidance under B4 and at Diagram 40, ADB2 was indeed not fit for purpose. In this single respect I agree with Studio E's Opening Statement. Therefore, as I have stated, insofar as Studio E followed ADB2, they should not in my opinion be criticised with respect to its failure to meet B4 of the Building Regulations.

2.6.20 Insofar as Studio E failed to meet the other guidance of ADB2 with respect to the external wall/ over-cladding, then in my opinion Studio E should be criticised for providing a service that was not compliant with that to be expected of a reasonably competent architect exercising reasonable care and skill.

2.6.21 It is my opinion that despite occasional poor drafting, some apparent mistakes, and its complicated format, ADB2 was sufficiently clear for an architect who studied it with appropriate care, to understand and apply it in a way that would meet the requirements of the Building Regulations.

2.6.22 I therefore reject Studio E's claim that its failure to meet what I consider to be the very clearly stated requirements of the Building Regulations can be blamed on the alleged unfitness for purpose of the entire regulatory system.

2.7 Theme F: Four routes to compliance (Studio E Opening Statement paragraph 9.0 et seq)

2.7.1 I agree with Studio E's Opening Statement that there are four possible routes to demonstrating compliance of a design proposal for a rainscreen façade (in terms of the entire wall construction of which it forms a part) with the requirements of the Building Regulations.

2.7.2 As I have already made clear, from the evidence which I have seen there is no indication that any of the alternative avenues to compliance were either explored or pursued by Studio E or the design team.

2.7.3 It is on this basis, and in light of the evidence that I have found to indicate that ADB2 was indeed being used (e.g. paragraph 6.7.13 of my report which refers to a technical review of 28 October 2015 that was chaired by Mr Sounes and confirmed that the design standards met 'Approved Document Building Regulations' which I have taken to include ADB2) that I have concluded that of the Four Routes to Compliance Studio E intended to apply the linear route in ADB2.

2.7.4 Whether the scheme as designed would have satisfied any other route to demonstrate compliance with Building Regulations can only remain as a matter of speculation. It seems clear that the answer would be no, but in any event, it was the duty of Studio E and Rydon to achieve compliance with the Building Regulations and to demonstrate such compliance to Building Control. This they failed to do either with the linear route in ADB2 or any other route.

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2.8 Theme G: That the Regulatory System permits the use of combustible materials (Studio E Opening Statement paragraph 10.6 onwards)

2.8.1 In principle, this statement is correct: combustible materials can be used in external walls subject to satisfying one of the four routes to compliance listed above.

2.8.2 Studio E failed to ensure that it followed one of the routes to compliance when specifying combustible materials for the design of the rainscreen / external wall arrangements.

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Studio E Third Theme Group

My broad interpretation of Studio's Opening Statement as relating to Themes H and I are:

<u>Theme H:</u> Product Manufacturers produced materials and data which had the effect of misleading designers and against this background and in connection with both the insulation and the rainscreen cladding as selected and specified, Studio E should not be held accountable for the fact that these materials failed to meet the requirements of the Building Regulations.

<u>Theme I:</u> That the Hyett Report ignores the input Studio E sought from specialists and consultants including Exova, and that, by implication, criticism that I have applied towards Studio E with respect to its design and specification work should have been exclusively directed elsewhere.

I comment on each of these themes in detail below.

2.9 Theme H: That Product Manufacturers produced information and data which had the effect of misleading designers (Studio E Opening Statement paragraphs 3.1.2 and 3.1.3)

2.9.1 I agree with Studio E's Opening Statement at paragraph 3.1.2 - product manufacturers did produce materials and testing data which had the effect of misleading designers to consider that their products were safe. In this context it is also of great concern that amongst those organisations and some individuals within such organisations that provide testing services, some at least appear to be offering a service that falls below reasonable expectations in terms of the quality and integrity of the service provided.

2.9.2 On the basis of my findings in carrying out research for this Inquiry, like criticisms can also be made with respect to some of those organisations and individuals within those organisations that apparently independently describe and certify the tests that have been carried out.

2.9.3 Whilst I have over the course of my career experienced many occasions when technical literature and testing certification as provided by manufacturers and suppliers has been poorly drafted, I have been deeply disturbed about the content of Dame Judith Hackitt's Report insofar as it touched on these matters. Furthermore, I have been appalled by the evidence that has come to light during my work for this Inquiry with respect to what appears to be cynical, shameless, utterly irresponsible and wholly unprofessional conduct on the part of persons of considerable responsibility in the two companies whose products contributed most to the intensity and rapid spread of the fire across and through the building.

2.9.4 Against this background I have concluded that Studio E should not be over harshly criticised for failing to further interrogate inconsistencies and ambiguities contained within the BBA Certificate for the cladding system as provided by Alcoa Architectural Products.

2.9.5 However, I cannot, on my understanding of the available evidence, accept that Studio E can credibly maintain that the essentially misleading Celotex product test literature to which it refers, and which we know was not available until August 2014 regarding the RS5000 product, influenced or gave comfort to its decision to specify the Celotex FR5000 product during the previous year.

2.9.6 I note that Studio E is dismissive of my own view that a review of the proposed materials for compliance with the requirements of the Building Regulations and Approved Documents should be carried out at the outset or at least very early in the life of any major new project, and especially any project that is of a type with which a practice is unfamiliar. I maintain my view in this respect and confirm that this has been my own practice over the course of my career.

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2.9.7 In this context it seems clear to me that Studio E should have been capable of establishing, very early in the project, that a PIR product would not meet the requirements for 'limited combustibility' as set out under paragraph 12.7 of ADB2. Studio E should also have been capable of appreciating that if there remained considerable interest in specifying that product within the over-cladding, particular care would be required in developing the design and selecting the appropriate approach in terms of managing the statutory consent procedure.

2.10 Theme I: That the Hyett Report '*Ignores the input Studio E sought from specialists and consultants including Exova….*' (Studio E Opening Statement para 3.1.5 (b), 7.5.2, 7.5.3 et seq)

2.10.1 My criticism of Studio E relates to the fact that it did not engage properly with Exova either during its pre or post novation appointments. Particularly in its role as Lead Consultant, but in any event in its general capacity as architect, Studio E should have ensured at the outset and throughout all stages of the project that Exova was fully and properly briefed. That included making sure that, in a timely manner and with respect to the design and specification as it developed, Exova was furnished adequately with all design drawings, specifications and reports relevant to, and as required to properly discharge, its duties under the terms of its appointment; and that all issues requiring follow up were properly followed up and resolved.

2.10.2 The key issue in this respect is whether Studio E provided the necessary information to Exova at the appropriate time in order to secure a proper and reliable review of the project design and specification of the over-cladding to ensure its ability as a design proposal to comply with the requirements of B4 of Schedule 1 of the Building Regulations.

2.10.3 I have been unable to find evidence that this occurred in spite of the fact that as early as October 2012 the Exova Outline Fire Strategy Rev 01 stated {EXO00000519/8}:

> '*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'.*

2.10.4 This key statement should have prompted Studio E to ensure that Exova were furnished with the relevant information (drawings and specifications) with regard to the over-cladding works. Although information was provided piecemeal to Exova about the over-cladding, Studio E does not appear to have provided a proper pack of information to Exova about the over-cladding, including all design drawings, specifications and reports relevant to that aspect of the works.

2.10.5 As architect, Lead Designer and Lead Consultant, Studio E should also have scrutinised the specialist advice received from Max Fordham with respect to the target U value and the proposed thermal insulation material, and as a result, questioned their combined viability in meeting the aspirations of the design team in a manner compliant with the Building Regulations and Approved Documents.

2.10.6 As I set out in Section 3 of my report dealing with the Indicative Approach, the target U value exceeded the performance requirements of Part L of the Building Regulations. Although laudable in terms of meeting contemporary targets with respect to ecologically responsible and sustainable design, such target U values should not be pursued in ways that fail to meet other important aspects of the Building Regulations, namely those related to safety and fire protection.

2.10.7 Above all, Studio E should have considered carefully Max Fordham's suggestion to adopt a PIR insulation within the cavity behind the rainscreen. That was something that its team should have been competent to do as architects, if it had carried out even a cursory review of the requirements of the Building Regulations and the guidance in ADB2 for a building typology in which it was totally inexperienced.

2.10.8 For the reasons set out earlier within this Supplemental Report, I do not think that Studio E can claim, with any credibility, that it had a right to rely on Harley (despite Harley's self-professed expertise as a cladding specialist) in terms of checking the basic principles that had informed Studio E's design and specification work with respect to the over-cladding work and its compliance with the Building Regulations and the guidance given under ADB2.

2.10.9 That is not to suggest that Harley are themselves exonerated of any responsibility in this respect; it is merely to make clear that it is my view that it is not reasonable for Studio E to seek to abrogate its own responsibility (in the direction of Harley) for those matters relating to the over-cladding work which clearly lay within, or at least should have lain within, its own expertise, and for which it was clearly responsible under the terms of its appointments at both pre and post novation stages.

2.10.10 Likewise, and for the same reasons, I do not believe that, post novation, Studio E can abrogate its responsibilities in the direction of Rydon, albeit I do believe that Rydon should have established an effective checking procedure in order to ensure that the design and specification work, as developed by Studio E and the other consultants, was compliant with the Building Regulations and Approved Documents. Consequently, I am not suggesting that Rydon are themselves exonerated of any responsibility in this respect.

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Studio E Fourth Theme Group

My broad interpretation of Studio's Opening Statement as relating to Themes J and K are:

Theme J: That cavity barriers are not effective with metal rainscreen cladding systems and that accordingly it is questionable as to whether any failure on the part of Studio E to design and specify cavity barrier arrangements in accordance with the guidance of ADB2 had any adverse impact on the course and severity of the fire.

Theme K: Questions relating to my past experience as an Architect.

I comment on each of these themes below:

2.11 Theme J: The performance of cavity barriers within metal rainscreen cladding systems (Studio E Opening Statement paragraph 17.14 and 17.15)

2.11.1 The effect that cavity barriers could have had, if properly specified and installed, in terms of preventing the fire from progressing through the cladding is a matter for the Inquiry to determine. I note that the Inquiry has already made a number of important findings on this topic in its Phase 1 report.

2.11.2 It remains my opinion that the lack of cavity barriers around the windows was particularly significant in the context of the Studio E design because, as shown in my report, the replacement windows were positioned in such a way as to create much larger gaps between the window frames and the concrete columns with which the jambs abutted, and with the chamfered spandrel below the windows, than had existed under the originally installed window arrangements.

2.11.3 With respect to the opinions of Dr Lane and Professor Torero about the limitations of cavity barriers in a rainscreen system with ACM PE panels, as referred to at paragraph 17.14 of Studio E's Opening Statement, I would make three points as follows:

a) That in the context of fire, the potential for any, let alone any serious, compromise to the performance of cavity barriers within metal rainscreen cladding systems was not widely appreciated by the architectural community at the time of design development for the 2012-16 Works at Grenfell. I suspect, although I have no available empirical research on the matter, that this was true even amongst architects who regularly designed such metal rainscreen systems. I would therefore not see the specification of such cavity barriers as were used within the 2012-16 Works as a cause for criticism of Studio E, provided that such specification and design was carried out in accordance with the standards expected of a reasonably competent architect, and the written instructions of the manufacturer.

b) However, in circumstances where an architect has failed in his/her efforts to properly specify and/or design a cavity barrier arrangement within a metal rainscreen system in accordance with the prevailing knowledge at the time that work was carried out, or in accordance with the guidance given in ADB2 in circumstances where no other route to Building Regulations compliance had been adopted, that architect cannot in my opinion claim in mitigation (as Studio E does at paragraph 17.15.4 of its Opening Statement) that) *'... the presence of cavity barriers would have made negligible difference to the spread of fire regardless of where they were located'.*

c) As a result of the failure to comply with the standards set out in ADB2, it is my opinion that the standard of service provided by Studio E still fell below that of a reasonably competent architect exercising reasonable care and skill.

2.11.4 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.

2.11.5 With respect to Studio E's Opening Statement at paragraph 17.15.1, where it is asserted that the strategy of installing cavity barriers in line with the compartment edge was reasonable and consistent with industry practice, I make the following points:

a) I do not know what *'in line with the compartment edge'* means. The cavity barriers as designed by Studio E were non-existent and therefore non-compliant at the window sills, and inadequately indicated, specified and/or resolved at the window jambs and at the head of the cladding system in the vicinity of the Crown.

b) With respect to Harley's work, which Studio E had a duty to comment upon in terms of specification and detailed design, the cavity barriers as designed by Harley were non-existent and therefore non-compliant at the window sills, window head and window jambs, and at the Crown. Studio E apparently took no action to rectify these failures.

2.11.6 With respect to paragraph 17.15.2 of Studio E's Opening Statement, where Studio E assert that it was for Rydon and its specialist sub-contractor to provide the detailed designs of the cavity barrier strategy and to ensure that it complied with the Building Regulations, Studio E are, in my opinion:

a) Wrong to assume that their design responsibilities with respect to past work on cavity barriers simply 'fell away' following their novation to Rydon. This is a matter that I have already dealt with under Theme B of this Supplemental Report.

b) Wrong to assume that they had no design responsibility for work carried out by Rydon/Harley in connection with the cavity barriers. Again, this is a matter that I addressed under Theme B of this Supplemental Report.

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2.11.7 At paragraph 17.15.3 of Studio E's Opening it is also said that Studio E liaised with Harley, Exova, Siderise and Building Control to co-ordinate Building Control's approval of the cavity barrier arrangements. As to that:

i) In my opinion Studio E are wrong to assume its role and responsibility with respect to statutory consents and Building Control was reduced to one of mere coordination.

ii) This is ultimately a matter of law upon which the Inquiry will decide, but on the basis of the documents that I have seen and the evidence I have heard so far, my opinion is that Studio E had a duty to progress its design and specification work to RIBA Stage F1 under its appointment to KTCMO, and thereafter to further progress its work under its appointment to Rydon. That Rydon appointment included the following:

'*Seek to ensure that all designs comply with the relevant Statutory Requirements…*' (item 8: Schedule of Services)

'*Provide supplementary notes to drawings and provide further drawings to show sufficient information to construct the project to completion consisting (but not limited to) the following:*

a) External wall… construction details (1:20/!:10/1:5) and

c) Window jamb /head / cill details 1:20 / 1:10/ 1:15)'

(Item 31: Schedule of Services) {RYD00094228}

(Note: the latter scale appears to be a typographical error and I believe should read 1:5).

2.11.8 In this respect I have seen no evidence that Studio E's responsibilities and duties in favour of Rydon were ever varied.

2.11.9 In conclusion, there is an increasing acceptance within the construction industry that maintaining the effectiveness of the cavity barrier within a metal rainscreen cladding is challenging due to the conflict between the necessity of having an open-air pathway and being able to seal this in the event of a fire. This issue of effectiveness and adequate testing is now highlighted more than ever following the Grenfell Tower fire. However, at the time of the Studio E design for the 2012-16 Works, the incorporation of cavity barriers in line with the guidance of ADB2 was deemed the most appropriate method of dealing with the issue of fire within the type of situation that arose at Grenfell through the over-cladding work.

2.11.10 Further advice notes with respect to the incorporation of cavity barriers within rainscreen systems available at the time of the 2012-16 Works are provided in Appendix C hereto.

2.12 Theme K: Response to comments on Hyett's experience. (Studio E Opening Statement para 8.18.2, 8.18.3, 8.18.4 and 8.18 et seq)

2.12.1 In response to the questions at paragraphs 8.18 to 8.18.4 of Studio E's Opening Statement, I can confirm that Heron Quays was designed in the early 1980's by the practice Nicholas Lacey, Jobst and Hyett, of which I was a founding partner. It comprised some 35 buildings to a quay of some 534 metres in length in the Isle of Dogs, London, immediately south of Canary Wharf.

2.12.2 A Building Licence (the equivalent of planning permission) was obtained by our practice on behalf of the developer from the LDDC (London Docklands Development Corporation) for the entire scheme which comprised a vitreous enamel panel arrangement to the external surface of its external walls.

2.12.3 The project, comprising buildings varying between three and eight storeys in height, was divided into some 5 phases of which only the first two phases were constructed (each phase consisted of a series of buildings and the phases were numbered consecutively from east to west across the site with Phase 1 being the most westerly).

2.12.4 Following completion of the first two phases the remainder of the project was abandoned as land values in the area escalated and the developer decided to adopt an alternative design for the remaining parts of the site which comprised high-rise towers (towers were deemed more appropriate to maximising the available development profits).

2.12.5 From memory all of Phase 2 would have been below 18 metres, whereas parts of Phase 1 may (just) have been over 18 metres in height. Detailed design and construction documentation were only prepared for the Phase 1 and 2 buildings.

2.12.6 Of the two phases that were constructed, Phase 2 was built and reached completion as Phase 1 construction commenced.

2.12.7 During design development for Phase 2 the Developer instructed a change from vitreous enamel to syntha-pulvin coated aluminium cladding panels. Accordingly, the early buildings were designed with an aluminium rainscreen cladding system in lieu of the originally intended vitreous enamel rainscreen system.

2.12.8 I left the practice in late 1987 after Phases 1 and 2 had been completed and I no longer have access to any of the drawings or specification work as carried out. The buildings have all since been demolished to pave way for additional high-rise commercial developments on the site.

2.12.9 As far as I can remember the external wall construction to Phase 2 comprised an aluminium framing arrangement affixed to the main concrete and steel structure. The aluminium framing supported the rainscreen cladding which comprised cassette type panels to the back of which had been 'factory fixed' inert and non-combustible boards. The purpose of these boards was to stiffen the panels. Mineral wool insulation was inserted within the cavity formed by the rainscreen cladding. The windows comprised of aluminium frames and double glazing. I believe that the internal linings to the external walls comprised plasterboard lining.

2.12.10 I did not oversee the detailed design development and specification work for this project – that task fell to one of my partners as I was principally pre-occupied with another project at the time. Accordingly, I do not have any detailed knowledge or recollection of the arrangements made with respect to cavity barriers.

2.12.11 Phase 1 which followed, and which comprised two buildings, was completed using vitreous enamel 'cassette' type panels without backing boards. The external wall construction was otherwise similar to Phase 2.

2.12.12 In response to the question under paragraph 8.18.2 of Studio E's Opening Statement, in terms of 'building regulations' my memory is that the Heron Quays project was dealt with under the London Building Acts and the London Building Constructional Bye-laws 1972. Heron Quays fell within the Borough of Tower Hamlets and although powers with respect to the granting of planning consent had been designated to the LDDC, responsibility for dealing with construction byelaws remained with Tower Hamlets.

2.12.13 I do not recall at what stage consent was achieved in this respect, but I have no recollection of any particular problems related to our dealings with the District Surveyor's office. Had there been any serious issues, I am sure that these would have come to my attention.

2.12.14 In response to the question under paragraph 8.18.3 of Studio E's Opening Statement, as to whether both myself and HKS have been involved in a Design and Build project which has incorporated a rainscreen system, the answer is in both instances yes.

2.12.15 The most recent of these was the new Optus Stadium in Perth, Australia, with which I was closely involved as resident partner for some two years. The cladding material there comprised aluminium cassette 'planks' (no polyethylene cores).

2.12.16 In each of our projects I can confirm that the routine procedure is to communicate the design of the envelope and to demonstrate its compliance with the design standards to the relevant building control authority, client/contractor leadership (and where appropriate, their fire safety advisers) through the preparation of a Fire Strategy Design Report. This is done in conjunction with the appointed Fire Consultant. As well as informing the design process, this forms an essential part of the application to the relevant Building Control Authority.

2.12.17 Our standard approach is to develop the Fire Strategy Design Report as early as possible, which is usually well ahead of the building regulations application.

2.12.18 In response to the question under paragraph 8.18.4 of Studio E's Opening Statement, I have been involved (as leading partner) in new build high-rise residential work (a series of towers at some 25 storeys high) but the external walls were of entirely masonry construction. The windows were aluminium and the structure was concrete column and slab.

2.12.19 Whilst I have been extensively involved with many large-scale refurbishment projects, I have not personally been involved with the refurbishment of a high-rise residential building beyond early concept work which I carried out on a project in Moorgate, central London.

2.12.20 I have been closely involved in a series of medium rise and housing association projects involving major upgrading.