

**IN THE MATTER OF THE INQUIRIES ACT 2005
AND IN THE MATTER OF THE INQUIRY RULES 2006**

THE GRENFELL TOWER INQUIRY

**FIRST WITNESS STATEMENT OF NEIL CRAWFORD
ON BEHALF OF STUDIO E ARCHITECTS LIMITED**

I, Neil Stuart CRAWFORD, Associate at Studio E Architects Limited, 90A Tooley Street, London SE1 2TH, WILL SAY AS FOLLOWS:

1. I would first like to express my deepest sympathy for the victims and everyone associated with the Grenfell tragedy. I cannot put into words my horror and shock at the events that unfolded on 14 June 2017 and my thoughts remain with all those so tragically affected by the fire, both then and now. Studio E supports the Inquiry and continues to cooperate with it fully.
2. This witness statement contains the following sections:
 - A Introduction
 - B Executive summary
 - C Experience and qualifications
 - D My involvement in the refurbishment of the Tower
 - E The detailed design of others
 - E1 Rydon's design responsibility
 - E2 Studio E's role

- E3 Harley's detailed design of the cladding
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 - F5 Reliance on third parties summary
- G Inspections

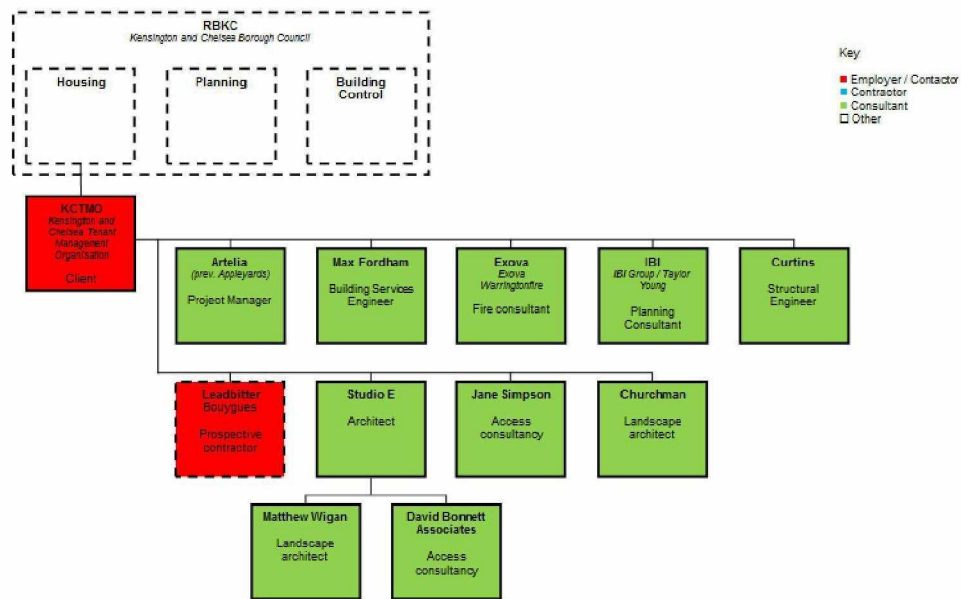
A **INTRODUCTION**

3. I am an Associate of Studio E Architects Limited (**SEAL**) and Part II architectural graduate. At all material times up to around July 2014, I was also an Associate at Studio E LLP (**SELLP**). I am authorised by SEAL to make this witness statement.
4. Between 2011 and 2016, SELLP and then SEAL (where the context permits I use **we** or **Studio E** to refer to the relevant entity) was retained in relation to the refurbishment (the **Project**) of Grenfell Tower (the **Tower**) for The Royal Borough of Kensington and Chelsea Tenant Management Organisation Limited (**KCTMO**). I make this witness statement on the basis of information obtained in that context. The Tower itself comprised 20 residential floors (the **Upper Floors**) above 4 mixed-use floors (the **Lower Floors**).
5. This is the first witness statement that I have made to the Grenfell Tower Inquiry (the **Inquiry**). The purpose of this witness statement is to respond to the request for evidence made of SEAL under rule 9 of the Inquiry Rules 2006 dated 5 June 2018 by the Inquiry (the **Request**). The Inquiry is examining the circumstances surrounding the fire at the Tower on 14 June 2017 (the **Fire**).
6. The facts and matters set out below are within my own knowledge unless I expressly state otherwise. Where facts and matters are not within my own knowledge, I cite the source(s) of the information.
7. As the events in question date back to 2011, I have been assisted in the preparation of this statement by looking back at contemporaneous documents (including emails) which have been disclosed by SEAL to the Inquiry. As the Inquiry has not yet been in a position to provide Phase 2 disclosure as at the date of this statement, I have not had access to what I understand will be the majority of documents held by the other parties involved in the Project. Accordingly, I may need to update my statement to reflect any new evidence in due course.
8. In this witness statement, I mainly refer to various documents in two ways. Where I understand the document will be made available on the Inquiry's electronic platform, I have referred to it by its "*Unique ID*" on the platform, in

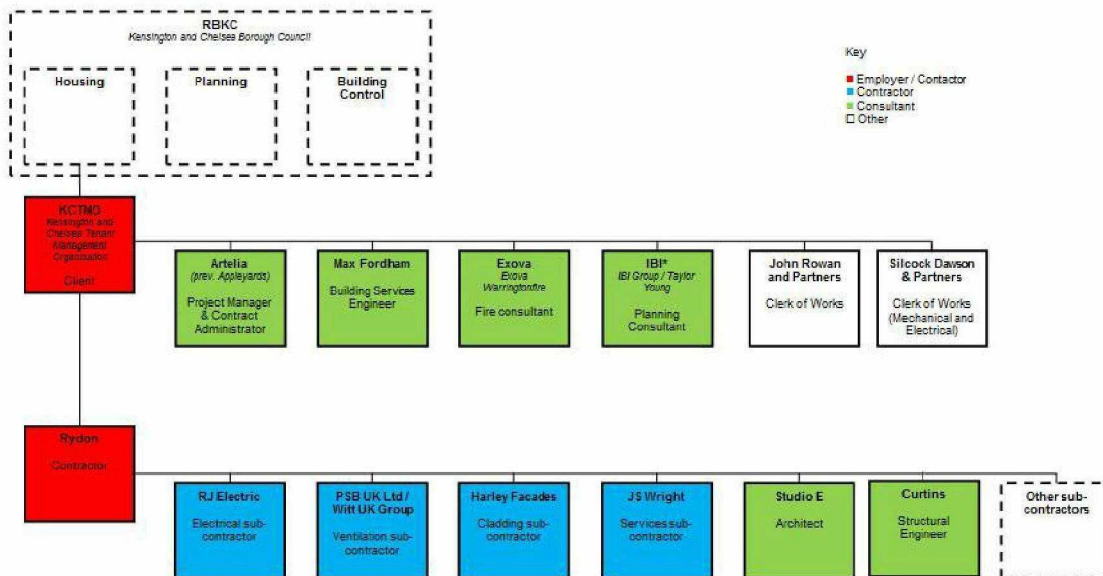
bold curled brackets in the format {XXX00000000}. For other documents, I have annexed them at exhibit NCI. References to pages in this exhibit are given in bold curled brackets, in the format {NC1/pagenumber}. In the preparation of this witness statement, including annexed documents, I have been assisted by Studio E's solicitors.

9. Before signing this statement, I have not read the witness statements of Bruce Sounes, Andrzej Kuszell or Tomas Rek for the Inquiry. However, this witness statement should be read in conjunction with that of my colleague Bruce Sounes. Bruce was the Project lead throughout and around the time that construction work started I assisted Bruce with the day to day tasks on the Project. As a result, it may assist the reader to have read Bruce's witness statement before reading mine.
10. To assist, SEAL's solicitors have prepared two diagrams representing the main parties involved on the Project, as set out below. The first diagram represents the key contractual relationships prior to the appointment of Rydon Maintenance Limited (Rydon), with the second diagram representing the key contractual relationship after Rydon's appointment. While I did not prepare these diagrams they represent my current understanding of the relationships that existed at the relevant times. Parties not defined in this document, are defined in those diagrams.

1: Key relationships prior to Rydon's appointment



2: Key relationships after Rydon's appointment



11. I have used the words "Pre-Contract" and "Post-Contract" to refer to the periods before and after KCTMO would have entered into a relationship with the main contractor to construct the project under a design and build contract (or precursor to it).
12. This statement has been produced following a review of various Project documentation and focuses on events, meetings and correspondence that deal with matters which we understand may have caused or contributed to the cause of the Fire, its spread, the ability to fight the Fire and the ability to escape from the Tower. The statement divides into three broad sections, covering:
 - 12.1 Studio E's awareness of the detailed design carried out during construction (from paragraph 30 below);
 - 12.2 The Request's specific queries regarding **Building Regulations 2010 (Building Regulations)** and associated guidelines (from paragraph 180 below); and
 - 12.3 Any inspections carried out by Studio E (from paragraph 258 below).

B EXECUTIVE SUMMARY

13. I was the Studio E employee with day to day involvement in the Project from around July 2014, although Bruce Sounes remained the Project lead and I would discuss the Project with him regularly as well as copying him into various emails (see from paragraph 25 below).
14. Rydon was appointed as the main contractor on 30 October 2014. After its appointment, it took over responsibility for the design of the Project following the "novation", which is a common feature of projects procured under a "design and build" route (see from paragraph 32 below).
15. As can be seen from the second diagram in paragraph 10, in the Post-Contract contractual structure, Studio E sat underneath Rydon as one part of Rydon's design team, having a primary contractual duty to Rydon. Studio E had various roles at the construction stage, including commenting on whether the work carried out by others was in line with the architectural intent set out in the Employer's Requirements (see from paragraph 37 below).
16. We did not have a formal deed of appointment with Rydon until the end of the Project which is not uncommon. However, from the outset of my involvement Simon Lawrence (Rydon) made clear to me that Rydon would contact us when it required and so I would coordinate responses to queries as and when we were asked to do so by Rydon. Studio E had responsibility for coordinating the Building Regulations approval process (see from paragraph 39 below).
17. Where we were asked by Rydon to consider revisions to the design, which was mainly in relation to layout issues as a result of KCTMO changing its mind about the internal layout, I completed this with input from Bruce Sounes (Studio E). Rydon had also appointed various specialist subcontractors who were responsible for their package of works, such as the mechanical and engineering subcontractors, JS Wright & Co Limited (**JSW**) and the cladding subcontractors, Harley Facades Limited / Harley Curtain Wall Limited (**Harley**). It was not part of Studio E's remit to monitor or supervise the works of anyone on site. Our responsibility was to assist and provide input as and when required to do so by Rydon.

18. Studio E was not required to inspect Rydon's work. In any event, Studio E would not have been able to independently review Rydon's work because Studio E was part of Rydon's design team (see from paragraph 37 below). I understand that the KCTMO appointed clerks of works, although I was not involved in their appointment, so cannot comment on their precise role.
19. I understand that there was an obligation in the formal deed of appointment with Rydon which required Studio E to carry out 25 site visits. I was not aware of this obligation until at least 2016, as it was not something that Rydon had specifically asked of me. However, I would make myself available on behalf of Studio E for site meetings and visits as and when requested by Rydon, to assist in spatially coordinating and helping solve problems that required architectural input during the Project.

C EXPERIENCE AND QUALIFICATIONS

20. Between 1991 and 1997, I studied architecture at the Mackintosh School of Architecture, which is part of the Glasgow School of Art. My sandwich year for Part 1 (1994 - 5) and subsequent summer was with BDP Glasgow. I also worked for six months in Los Angeles for Morphosis Architects in the summer of 1995. I started my career at Foster + Partners, where I worked from October 1997 to April 2009. I was promoted to Associate in 2004. I attach a copy of my CV at {NCI/1 -3}.
21. At Foster + Partners, I worked on packages and then ran jobs of various sizes and capacities, including the Hardman Square project in Manchester where I was involved from inception to completion and on cladding issues (I discuss this further at paragraph 241 below) and Millharbour Quarter, a substantial masterplan project that included a 450 unit market residential tower and two towers of affordable housing. This project got to the planning stage but was not eventually constructed. On that project, I was the project associate reporting to the partner at Foster + Partners coordinating a team of up to 20 people.
22. In June 2009 I moved to Studio E as an Associate, and I have been employed by either SEAL or SELLP at all material times since that date.
23. I am a Part 2 architectural graduate. This means that I have had 5 years of formal architectural training. I have also had over 21 years of practical experience. I have not taken a Royal Institute of British Architects (RIBA) Part 3 final qualifying exam.

D MY INVOLVEMENT IN THE REFURBISHMENT OF THE TOWER

24. During 2011, I was working on the Kensington Aldridge Academy and Kensington Leisure Centre development project (KALC) which was a project led by Andrzej Kuszell, a designated member of SELLP and Director of SEAL. The scheme consisted of a school, leisure centre and a small amount of market housing. Studio E took the school component (which I worked on extensively) through to completion. KALC is located directly north-east of the Tower, and Studio E was the appointed architect.
25. From or around July 2014, I became involved in the Project. I understand that my colleague, Bruce Sounes, who was the Project lead throughout, will be providing a description of Studio E's involvement more generally in the refurbishment of the Tower, therefore in this statement I focus on my own involvement in the Project.
- 25.1 According to my Outlook calendar on 13 August 2014, Bruce and I had a "*handover*" discussion regarding the Project {NCI/28}. However, the handover of the day to day work was gradual and I regularly discussed the Project with Bruce when I first became involved in or around July 2014, particularly as we were sat within conversational distance in the office.
26. The reasons that I became involved in the Project on a day to day basis at this point include:
- 26.1 I was still involved the construction phase of KALC at this time but my involvement was starting to tail off as that project neared completion, so I was often nearby and could therefore visit both sites at the same time;
- 26.2 I had an existing relationship with a number of the parties that worked on both projects (including Max Fordham, Artelia and Curtins);
- 26.3 That included Building Control with whom I had been working on the KALC project; and
- 26.4 Studio E's design intent work on the Project was complete, and the Project was about to go into a new phase, as discussed below.

27. The final point reflects one that I will come back to in this witness statement, which is the shift that occurred around the time that Rydon was appointed main contractor on 30 October 2014. Although I understand Bruce will explain this in further detail in his statement, the significant elements of this shift included:
- 27.1 Studio E's direct contractual relationship shifted from being with KCTMO (Pre-Contract) to being with Rydon (Post-Contract);
 - 27.2 Studio E's main day to day focus shifted from preparing the high-level design for tender (Pre-Contract) to assisting Rydon and Rydon's subcontractors in implementing the intent of the tendered design and to prepare parts of the design on Rydon's behalf (Post-Contract); and
 - 27.3 Studio E's overall level of involvement decreased over time as instead of drawing together the various design input for tender (Pre-Contract), following Rydon's appointment, Studio E was mainly involved in assisting Rydon in response to specific queries (Post-Contract).
28. As a result of the above, and due to my involvement in the Project on a day to day basis starting at or Post-Contract, my experience and therefore this witness statement focuses on the following issues:
- 28.1 The extent to which, if at all, Studio E was involved in or aware of detailed design carried out by others, such as subcontractors for individual work packages (from paragraph 30 below);
 - 28.2 Building Regulations and associated guidelines (from paragraph 180 below); and
 - 28.3 Whether Studio E carried out any inspections of the Tower during or around the time that refurbishment works were completed and if so, the outcome of those inspections (from paragraph 258 below).
29. The works to the Lower Floors took up a lot of my time on the Project as it included internal layouts and packages such as dry lining, ceilings etc. My understanding is that much of the work to the Lower Floors is not relevant to the Inquiry (save for the routing of the smoke vents and means of escape) and I

generally do not refer to those aspects of my work in this statement, unless I consider it to be relevant to the Request.

E THE DETAILED DESIGN OF OTHERS

30. In broad terms, at and Post-Contract:

30.1 Rydon had taken over the design responsibility for the Project (this is an important distinction, but can be overlooked (eg. see {SEA00013014} where in 2015 Max Fordham reminds Artelia of this fact));

30.2 Rydon selected and used specialist contractors to develop and finalise certain areas of the design, such as the cladding and the mechanical and electrical (the **M&E**) installations; and

30.3 Rydon and/or its contractors were to construct the finalised design that had been developed with the input of the specialist contractors (the **Workmanship**). The Workmanship occasionally reflected Rydon/contractors' design-like decisions, such as how a certain item should be installed where this was not specifically indicated in the design.

31. In this section of my witness statement, I focus on the extent of my involvement in the specialist contractors' design of the Project. Generally, I was not involved in the Workmanship, but I address the question regarding the inspection of the Project at section G below.

Rydon took over responsibility for the design of the Project

32. Pre-Contract, Studio E was primarily responsible for the architectural designs and drawings which were submitted to Royal Borough of Kensington and Chelsea (**RBKC**) Planning Department (**Planning**) for approval. Following its appointment as main contractor, Rydon entered into a contract with KCTMO. Studio E was not party to, and I did not see, the contract between KCTMO and Rydon (the **Main Contract**). However, under a main contract for a design and build project, Rydon, as the main contractor, is responsible for the design and construction of the Project.
33. As the design of the Project was not complete when Rydon took on this responsibility, Rydon needed to develop the designs and drawings and comply with the Employer's Requirements, which included developing the specification contained in the Employer's Requirements into something that could be built.
34. My understanding (Studio E was not involved in the contractual arrangements with Rydon's subcontractors) is that Rydon began to put together its detailed design team quite soon after its appointment (while I understand that the Main Contract was dated 30 October 2014, by 6 August 2014, Rydon confirmed its subcontractor designers were "*on board*" {**SEA00011453**}) and key members of the design team at this point were:
- 34.1 Harley - specialist cladding designers (which designed the details of the cladding) (see paragraphs 46 to 137 below);
- 34.2 **JSW** - the M&E contractors (see paragraphs 138 to 174 below); and
- 34.3 Curtins Limited (**Curtins**) - the structural engineers (see paragraphs 175 to 179 below).
35. As I discuss below, Exova (UK) Ltd (**Exova**), KCTMO's fire engineer, continued to provide advice on fire safety and fire engineering issues throughout the Project. I do not know whether Exova was appointed by Rydon or not, but consider it more likely that it remained appointed by KCTMO, due to the nature of some of the contemporaneous correspondence (see paragraphs 188 to 202 below).

36. My understanding at the time was that both Harley and Rydon were experienced in working on projects of this nature, and in particular on high-rise residential blocks. It was clear from my interactions with Simon Lawrence that the Project was 'bread and butter' type work for Rydon, and a large part of the organisation was specialised in this kind of work. I was aware that Harley and / or Rydon had already built various projects of a similar nature, including the installation of ACM rainscreen cladding to residential tower blocks. See for example paragraph 83 below.

E2 Studio E's role

37. In terms of how Studio E worked with Rydon Post-Contract, we were its appointed architect. I had expected that this would involve providing the usual services set out in the RIBA Plan of Work (ie work stages J, K and L, as they were known at the time), specifically with the role of lead designer and architectural designer. However, Simon Lawrence (Rydon) said to me in an informal conversation around the start of my involvement in the Project that Rydon tended not to use its architects as much as it might do. As such, he envisaged Studio E's role being more responsive, with Rydon maintaining a greater degree of control over the design process, than I would normally expect from a design and build contractor. In that regard, I had less to do for Rydon than I expected.
38. It was common for Rydon to have constructed drawings which it had not provided to me or Studio E for comment. For example, aspects of steelwork were installed in the main lobby, and changes were made in room mock-ups for KCTMO with plastic window boards, which I was only shown after they had been agreed with KCTMO. Although I found Simon Lawrence quite hands on, drawing control was more informal than I was accustomed to, perhaps as I had previously been involved in larger projects with drawing control protocols. Rydon did not involve Studio E in all the site meetings which took place or design decisions and we were not copied into all emails. This meant that Studio E was often left to respond to Rydon's specific design queries as they arose.
39. I understood Studio E was under an obligation to coordinate the Building Control approval process. I did this by:
- 39.1 Sending submissions to Building Control, which contained information from the designers on the Project and specialist sub contractors (such as Harley);
 - 39.2 Circulating Building Control's queries in response to the Submissions and requests for further information; and
 - 39.3 Collating the designers' responses to Building Control's satisfaction.

40. Sometimes this coordination process occurred at site meetings. However, while I considered that Studio E was primarily responsible for coordinating the approval by Building Control, we were not party to all correspondence that was sent to Building Control, such as in relation to the smoke ventilation which I discuss further in section E4 below. Building Control set its own agenda for checking off items, and it made it clear to me that I would be contacted should further information be required. Rydon's style was very much of dealing with issues directly, I believe for expediency and because Rydon was efficient at doing so. To this end my understanding is that I was not party to everything Building Control agreed on.
41. While I understood Studio E was appointed to carry out various services Post-Contract, a key concern for me through the construction phase was to maintain the integrity of the architectural intent established at planning and tender stages. This did not necessarily involve commenting on the finer detail or technical aspects of designs or the selection of materials, but was from the view of architectural intent which covered aspects such as siting, spatial arrangements, amenity, tolerances, dimensional co-ordination, the appearance, proportions, colours or finishes of the products. I would comment as to whether the drawings provided by others were compatible with the architectural intent and address or highlight any implications or clashes that might need to be considered to ensure the architectural intent was preserved. If I spotted a clear and obvious error when reviewing drawings for consistency with architectural intent, I would raise a comment for the designer to address. An architect may not have the know-how to identify technical errors in the designs and / or specifications of a designer of another, specialist, discipline unless the error is of a kind that would be manifest to an architect.
42. This process is considered further below. However, I did not consider that the review of drawings of others during the Project was to double check that they were technically correct, or necessarily compliant with Building Regulations, above and beyond their consistency with the architectural intent. It is simply not feasible for an architect to review every drawing on a project in detail, particularly where some of the design packages will have been carried out by specialist designers who are skilled at their particular package. There would be

no need to appoint specialist designers if the architect could carry out the detailed designs of all aspects. In this statement I refer to the process described in this paragraph as commenting on the 'architectural intent'.

43. I have described how this worked practically in relation to the cladding and M&E packages on which I have focused below, but note that there were other queries which Rydon would refer to Studio E from time to time, such as on how to interpret the Employer's Requirements (such as confirming the need for the doors to comply with acoustic and fire criteria {SEA00012565}), (Studio E was not involved in any door replacement works for the Upper Floors) or where specific items were to be located (particularly where that required coordination between designers {SEA00012623} {SEA00012624}).
44. Throughout the Project, I attended a number of meetings with Rydon and members of the design team, in which the progress of the Project was discussed and various issues addressed. Having reviewed my emails, I have located the following minutes of such design team meetings:
- 44.1 I received an email from Suleyman Ekingen of Curtins on 23 July 2014 referencing the design team meeting which had taken in the week commencing 14 July 2014 {SEA00011338} {SEA00011299}.
- 44.2 On 13 August 2014, attended by Rydon, Studio E, Curtins, JSW and Harley {SEA00011545}. Simon Lawrence (Rydon) said that internal works within the flats must start on 12 January 2014, otherwise there was a risk that the Project completion date would be delayed. I have my own handwritten notes from this meeting {SEA00011473};
- 44.3 On 2 September 2014, attended by Rydon, Studio E, Curtins, Harley {SEA00011581}. Simon Lawrence (Rydon) confirmed that Rydon and KCTMO had now signed the Main Contract (I am now aware that this is not consistent with the date of the Main Contract which was inserted in Studio E's appointment with Rydon). I have my own handwritten notes from this meeting {SEA00011559}, which state among other things "*AOV's - current system if fire notification not compliant or not working (?)*". At or after the meeting, there was a visit to the roof, which I believe

was to discuss issues of access and maintenance and the crown feature and I took some photographs {SEA00000180} {SEA00000181};

44.4 On 23 September 2014. I have my own handwritten notes from this meeting {SEA00011798}.

44.5 On 7 October 2014 {SEA00011876}. I have my own handwritten notes from this meeting {SEA00011888}.

44.6 On 22 October 2014. I have my own handwritten notes from this meeting {SEA00012000}. One of the issues that Rydon had discussed around the time of this meeting was KCTMO's requests for changes to the design on various items including key issues such as window sizes and new flat layouts which had been raised by KCTMO at this relatively late stage {SEA00011955}. According to Rydon, these were changes to the tendered design (ie. the design that KCTMO had already agreed), and were not changes necessary due to anything Rydon had done to date {SEA00011987}.

44.7 On 11 November 2014 {SEA00012102} {SEA00012103}. I have my own handwritten notes of this meeting {SEA00012115}.

44.8 On or around 16 December 2014. After the design team meeting there was a site walk around. I took some photographs which showed the installation of the new central heating water pipes in the area that was to become the new riser in the lobbies in the Upper Floors {SEA00000233} {SEA00000234} {SEA00000235}. I would have taken these as a record for Studio E, for example to show people in the Studio E office to keep them aware of progress or to assist me in spatial coordination, such as if I needed to prepare a diagram showing how the pipes were boxed in in due course.

44.9 On and/or around 23 January 2015. I have my own handwritten notes of this meeting {SEA00012564}. Following the meeting, I circulated revised layouts to the Lower Floors {SEA00012589}.

- 44.10 On 18 February 2015. I have my own handwritten notes of this meeting {SEA00012764}. The meeting concerned the location of smoke ventilation system ducts for the main smoke ventilation system.
- 44.11 On 24 March 2015. I have my own handwritten notes of this meeting {SEA00012980}.
- 44.12 On 30 April 2015. I have my own handwritten notes of this meeting {SEA00013125}.
- 44.13 On 8 December 2015 {SEA00013778}. My understanding is that the meeting focused on sign off.
- 44.14 On 16 December 2015 {SEA00013757}. I have my own handwritten notes of this meeting {SEA00013756}. Around this time, Rydon said "*As completion draws nearer it is highlighting that there is a raft of detailing that needs to be signed off*" {SEA00013717}. I believe this comment relates mainly to the smoke venting.
45. In the remainder of this section, I address the development of the detailed design for the cladding, M&E installations and structure of the Lower Floors, to the extent I understand them to be relevant to the Request and to the extent that I recall being involved.

E3 Harley designed the detail of the cladding

Cladding: introduction

46. Where the context permits, I have used the word "cladding" to refer to the entire building envelope, including the Lower Floors, and any feature within that envelope such as the windows and fire cavity barriers.
47. However, I understand that some features of the cladding will not be particularly relevant to the Inquiry, notably the Lower Floors which were affected to a lesser extent, are excluded from Dr Lane's first report and incorporated different components such as glazed curtain walling and glass fibre reinforced concrete.
48. As the specialist cladding subcontractor, Harley was responsible for designing the cladding system and specifying the materials to be used. I refer only to the features which I consider fall within the Request by focusing on the particular parts of Harley's design of the Upper Floors. The way that I have done this is by identifying the specific drawings produced by Harley that show details relevant to the Upper Floors (the **Harley Drawings**).
49. By way of further background, Harley maintained a drawing register that should show all of the drawings and revisions of those drawings, who they were sent to, and on what date. For example, towards the end of the Project, on 18 February 2016, Harley attached a copy of its drawing register in an email to Rydon, to which I was copied {SEA00014060} (the **Harley Drawing Register**).
50. The Harley Drawing Register shows that Harley produced 125 different drawings during its detailed design process, many of which were revised multiple times as they were updated over time. For the purpose of this witness statement, I have divided the Harley Drawings into three sections:
- 50.1 Drawings concerning the cladding of the Upper Floors;
- 50.2 Drawings concerning the cladding of the crown (the architectural detail at the top of the Tower); and

50.3 Drawings concerning the cladding of the Lower Floors, which I do not focus on further in this witness statement.

51. The following drawings are of the cladding of the Upper Floors:

51.1 C1059-100;	51.13 C1059-307;
51.2 C1059-200;	51.14 C1059-308;
51.3 C1059-201;	51.15 C1059-309;
51.4 C1059-202;	51.16 C1059-310;
51.5 C1059-203;	51.17 C1059-311;
51.6 C1059-300;	51.18 C1059-312;
51.7 C1059-301;	51.19 C1059-SK1;
51.8 C1059-302;	51.20 C1059-SK2;
51.9 C1059-303;	51.21 C1059-SK3;
51.10 C1059-304;	51.22 C1059-SK5;
51.11 C1059-305;	51.23 C1059-SK6;
51.12 C1059-306;	51.24 C1059-SK7.

52. The following drawings concern the cladding of the crown:

52.1 C1059-216;	52.6 C1059-333;
52.2 C1059-217;	52.7 C1059-334;
52.3 C1059-218;	52.8 C1059-335;
52.4 C1059-330;	52.9 C1059-336;
52.5 C1059-332;	52.10 C1059-337.

53. I was not involved in the development of the cladding design prior to Rydon's appointment, however, I understand that Bruce Sounes (Studio E) addresses this aspect of the design in detail in his witness statement.

Cladding: Studio E's input on the Harley Drawings

54. From time to time, Harley asked me to comment on a drawing or a set of drawings. I discuss this in the context of specific drawings further below, but in summary I would then usually send back some observations, commenting on the 'architectural intent'. I would then record my comments on any particular drawing using a stamp describing the documents as status "A", "B" or "C" (the **Status**). The meaning of the Status "A", "B" or "C" is a convention which is widely used and commonly understood in the construction industry. It essentially meant what was stated in the wording on the stamp:

54.1 "A" – Conforms to 'architectural intent'.

54.2 "B" – Conforms to 'architectural intent' subject to incorporation of comments. Revise and resubmit for A Status.

54.3 "C" – Does not conform with 'architectural intent'. Revise and resubmit.

55. In my opinion, it was technically incorrect for Harley to ask me to "*approve*" a drawing. Specialist packages such as cladding, lifts, stairs, etc. would be completed by, and the primary responsibility of, specialist subcontractors. We comment on their drawings only from the perspective of 'architectural intent'.

56. There are many packages on which we do not comment for various reasons. These are primarily due to cost where the contractor does not require the subcontractor to produce drawings or in some cases drawings are not passed onto us for comment (such as those in relation to the retention of existing window frames and panels and the smoke extraction system). Cladding packages have by far the largest visual impact in relation to design intent on how a building is perceived and are therefore almost always made available. There is also significant risk that they will fall short of expectations as is often witnessed in mock-ups.

Cladding: July 2014

57. In July 2014, when I became involved in the Project on a day to day basis, Rydon and Studio E were still liaising with KCTMO and Planning regarding the colour of the cladding panels and Harley had not yet started its full design of the cladding {SEA00011396}.
58. In order to assist in deciding on the colour of the cladding panels to be used, Studio E was involved in preparing designs for a mock-up of the cladding panels, to show what certain colours would look like against the Tower. I understand that Harley / Rydon assembled the mock-up which was based on a proposal drawing Harley had put together {SEA00011113}.
59. Bruce Sounes (Studio E) produced an annotated image of the cladding mock-up to show the colours of the panels in it {NCI/4}¹. At some point during the week commencing 14 July 2014, while on site at KALC, I attended the Tower after visiting the KALC site, in order to view this mock-up. I was not impressed with the quality of the mock-up and conveyed this to Bruce. This was because it had crude visible fixed rivets with the jointing and finishing not in line with my expectations, although to show different colour options it was adequate. Bruce continued to work on the choice of cladding panel colour around this time {SEA00011390}.

Cladding: August 2014

60. By way of background, and according to dated photographs in KCTMO's regeneration newsletter, by late August 2014, Rydon and/or its subcontractors had started carrying out enabling works, which are essentially preparatory works that make it possible for construction to begin. For example, they had been drilling holes in the lift lobbies for the Upper Floors to make space for new heating pipes {SEA00012018_0002} and had started erecting mast climbers on the outside of the Tower {SEA00012018}.

¹ See further: {SEA00011302} {SEA00011304} {SEA00011305} {SEA00011306} {SEA00011307} {SEA00011308} {SEA00011311} {SEA00011312} {SEA00011313} {SEA00011314} {SEA00011315}

61. The minutes of the design team meeting on 13 August 2014 state that Harley had identified the "*head & cill details around the windows and the cassette support rails*" as initial "*design risk*" (which means the risk that something would potentially impact on the design and they needed to procure them in advance of finalising their production drawings) and "*programme risk*" (which means the risk that something would happen which might cause the Project to be delayed), because they were bespoke aluminium {SEA00011545_0002}.
62. The minutes of the meeting also state that:
- 62.1 Rydon asked for a mock-up window to be installed in flat 145, and there was some asbestos risk for the works; and
- 62.2 Rydon stated that it would be preferable for the existing outer window frames to be left in place to reduce damage to existing window reveals (I discuss this further from paragraph 83 below);
63. Further, the minutes also state that, although formal sign off of the planning application was expected on 29 August 2014, the design should proceed based on the following criteria:
- 63.1 Champagne coloured cladding panels for the existing residential flows and Glass Reinforced Concrete (**GRC**) panels around the low levels;
- 63.2 Rainscreen cladding to be cassette type (hidden fixings);
- 63.3 Joints to columns to be closed, two panels abutting rather than open "*Birdsmouth*" feature; and
- 63.4 No external louvres to windows {SEA00011545_0005}.
64. My handwritten note of the meeting notes "*fire strategy not approved*" {SEA00011473}. I wrote this for my own benefit as I had just recently started work on the Project.

Cladding: Harley's preliminary drawing set - 22 August 2014

65. On 22 August 2014, Kevin Lamb (Harley) emailed Simon Lawrence (Rydon) and stated he had attached some preliminary drawings "*to prove the basics of the design & set out, prior to [Harley] producing a full design package*" {SEA00011490}. Studio E was copied into this email. The drawings attached were {All drawings at SEA000002851} C1059-200 {SEA000002851_0001}, C1059-300 {SEA000002851_0002}, C1059-301 {SEA000002851_0003}, C1059-302 {SEA000002851_0004}, C1059-303 {SEA000002851_0005}, C1059-304 {SEA000002851_0006}, C1059-305 {SEA000002851_0007}, C1059-306 {SEA000002851_0008}, C1059-SK01 {SEA000002851_0009}, C1059-SK02 {SEA000002851_0010} and C1059-SK03 {SEA000002851_0011}.
66. On 26 August 2014, I emailed Kevin Lamb (Harley) and Simon Lawrence (Rydon) and included some initial observations on the preliminary drawings {SEA00011512}. I referred to discussing them at a design team meeting the next day, but this meeting did not go ahead {SEA00011513}. On 27 August 2014, I provided further comments and a mark-up on the preliminary drawings {SEA00011521} and said I would call Harley the next day to discuss the comments. I do not have a record of that call.
67. The Harley Drawing Register states that Harley issued copies of a number of drawings on 29 August 2014, including revisions A of C1059-SK01, C1059-SK02 and C1059-SK03. I have not located our copies of these drawings although we did not receive all revisions of the drawings. With smaller projects it is not uncommon to have an ad-hoc drawing control system, as was the case here. However, with a project this size I would have expected Rydon to have implemented an electronic drawing control system, which I had often used on previous projects. I do not know why Rydon did not implement such a system for the Project.

Cladding: September 2014

68. On 2 September 2014, at design team meeting 2, Harley did not provide a substantive update on the progress of the facade works {SEA00011581}. However, the minutes state the following issues were discussed:

- 68.1 Cladding joint sizes and the "*birdsmouth*" detail. According to the minutes, I was to check with Bruce as to whether the "*birdsmouth*" detail was current. Birdsmouth detail is a 'V' shaped detail on the front edge of the diamond shaped columns.
- 68.2 U-values (which are essentially measurements of the rate of transfer of heat through a structure) for the cladding and how the U-values in the specification were decided. Simon Lawrence (Rydon) wanted to know whether the figures needed to be rechecked and whether the insulation thickness shown on Studio E's drawings was correct. This would have been checked with Max Fordham.
- 68.3 Kevin Lamb (Harley) requested details about the size of the kitchen extract fan so that the panel at the top of the kitchen windows (the **Kitchen Extract Panel**) could be sized correctly. The minutes state that Simon Lawrence (Rydon) and JSW would discuss this.
- 68.4 There was a difference in opinion about the materials for the Kitchen Extract Panel. The minutes state that Harley believed that a glazed in louvre panel was required, whereas Rydon believed that it was an insulated panel with a standard white extract fan cover showing on the outside. Based on the drawings, I thought the former interpretation was correct but would check with "BC", which I think must have been a typographical error for Bruce Soules. Also, I would have expressed concern at a standard white extract fan against the carefully considered external colour scheme; this would have stood out badly and would have looked aesthetically ill considered.
- 68.5 As the appearance of the Kitchen Extract Panel was part of the planning drawings, we discussed what could be done if Planning required the external housing of the extract fan should be a complimentary colour to the adjacent cladding. The minutes state "*we could look at fixing a powder coated louvre to a fixed panel and then the extract fan could be fixed in place from inside*" (i.e. hiding the white unit). Cost and expediency would have been the key decisions driving this from the

contractor's perspective; colour and aesthetics were the key issues for Studio E and me.

- 68.6 Regarding the roof, Simon Lawrence (Rydon) raised a concern that the design of the crown would make it difficult for a maintenance team to abseil down the building without damaging it. I remember various conversations about cleaning equipment, how to use cradles etc. However, this was not received well on the basis of cost. Solutions were to be based around abseiling. Reference was made to how abseilers would not generally use the historically purpose placed hook (irrespective of whether they had been shown to be tested) and typically ropes would be circled around the central core.
- 68.7 I was to make further comments by marking up drawings, if required.
69. Following the design team meeting, on 3 September 2014 I emailed Harley and Rydon with some additional comments on the drawings {SEA00011577}, and later, a drawing showing the details of the crown that I understood to have been agreed with Planning {SEA00011582}.
70. On 12 September 2014, Simon Lawrence (Rydon) emailed me and said that Ray Bailey (Harley) had said that Harley had an impending deadline "*to order dies to produce the window head and cill support angles*". He asked me if I had any further comments on these components and noted that because these were part of the sub-structure, they would not be seen. These items were important because they were bespoke, and if Rydon got them wrong then they would have to re-order them so that the windows would fit. However, I think that Simon Lawrence commented that these "*won't be seen in the end finish*". This hinted his understanding that Studio E was unlikely to have comments on issues without a direct connection to the aesthetics of the cladding system {SEA00011674}. I replied stating that I had no further comments if everyone else was happy that we would meet the target U-values {SEA00011675}.
71. On 17 September 2014, Daniel Anketell-Jones (Harley) emailed Rydon and Studio E and attached a formal request for information (RFI) regarding horizontal firebreaks (which I consider actually meant to refer to fire rated cavity

barriers as opposed to fire stopping) within the cladding areas {SEA00011703}. I have explained the RFI {NCI/5} in further detail from paragraph 189 below, but in short, I contacted Exova, which was the fire engineer on the Project and produced the fire strategy reports. I would have contacted Exova as it is an authority on all things fire related. There was a certain amount of to and fro in relation to how the Building Regulations should be interpreted and applied between Harley / Rydon / Studio E and Building Control. An agreed interpretation was achieved as outlined further below.

72. Around this time, Harley had raised the concern that it needed to place the order for the rainscreen cladding material by 6 October 2014, to avoid causing delays to the Project {SEA00011738}.

Cladding: Harley's updated drawings - 22 September 2014

73. On 22 September 2014, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said "*drawings as raised in issue for final approval, based upon the Architects comments and discussions at our last meeting*" {SEA00011759}. He attached drawings C1059-200 rev A, C1059-300 rev A, C1059-301 rev A, C1059-302 rev A, C1059-303 rev A, C1059-304 rev A, C1059-305 rev A and C1059-306 rev A.
74. Bruce Sounes (Studio E) provided a number of initial comments on the drawings, in particular that the deeper window reveals and smaller windows caused by the increased depth of cladding meant Harley's detailed design looked different from the design approved by Planning {SEA00011797}.

Cladding: Harley's updated drawings - 23 September 2014

75. The Harley Drawing Register states that Harley issued copies of a number of drawings on 23 September 2014, including C1059-200 rev B, C1059-201, C1059-202, C1059-203, C1059-300 rev B, C1059-301 rev A, C1059-302 rev A, C1059-303 rev A, C1059-304 rev B, C1059-305 rev A, C1059-306 rev A, C1059-307, C1059-308, C1059-309, C1059-310 and C1059-311.
76. I replied to Harley regarding the issue of the drawings set out above on 24 September 2014, stating "*Following yesterdays review of the cladding drawings*

please find attached marked up drawings" {SEA00011805}, and attached marked up drawings {SEA00002878}, including Harley Drawing C1059- 200 revision A {SEA00002878_0001}, C1059-300 revision A {SEA00002878_0002}, C1059-301 revision A {SEA00002878_0003}, C1059-302 revision A {SEA00002878_0004}, C1059-303 revision A {SEA00002878_0005}, C1059-304 revision A {SEA00002878_0006}, C1059-305 revision A {SEA00002878_0007} and C1059-306 revision A {SEA00002878_0008}.

77. In that email I said I was seeking some information from Max Fordham regarding, among other things, trickle ventilation to the flats. There was an ongoing conversation about trickle vents around this time {SEA00011811} {SEA00011850} {SEA00011852} {SEA00011887} and I understand that Rydon had separate conversations with Harley about the trickle vents {SEA00011827}. Trickle vents are small opening vents usually within the window frame that allow for small amounts of background ventilation to take place. Max Fordham's view was that trickle vents were important for ventilation purposes {SEA00011882}. My input regarding the trickle vents was coordinating between Max Fordham (on the client side) and Rydon, essentially to establish whether Max Fordham's recommendations on levels of background ventilation were based simply on compliance with applicable regulations or whether there was an aspirational element to them, because I think Rydon had suggested that they did not use trickle vents on a similar project. I also recall the comment being made by Simon Lawrence (Rydon) that the residents would be likely to block them up in any event.

Cladding: Harley's updated drawings - 25 September 2014

78. On 25 September 2014, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said "*Please find attached drawings revised, where practical, in accordance with our discussions at the last meeting and Architects comments from yesterday*" {SEA00011834}. He also made a number of comments on my recent drawing comments. He attached a number of drawings, including C1059-200 rev C, C1059-201 rev A, C1059-202 rev A, C1059-203 rev A, C1059-300 rev B, C1059-301 rev A, C1059-302 rev B, C1059-303 rev A,

C1059-304 rev C, C1059-305 rev B, C1059-306 rev B, C1059-307 rev A, C1059-308, C1059-309, C1059-310 rev A, C1059-311 rev A, C1059-312, {SEA00002894}. Save for C1059-312, these drawings were either the same as or a later revision of the drawings that the Harley Drawing Register stated were issued on 23 September 2014.

79. On 25 September 2014, Kevin Lamb (Harley) emailed Simon Lawrence (Rydon) and copied me in. He said he needed Rydon to confirm the panel size for the louvred units in the Kitchen Extract Panels and provided his views on some of the comments I had made on the drawings. This included comments on the drawings which showed the louvred units, the joint infill piece which was showing on the cladding column rather than the spandrel and in relation to trickle vents {SEA00011834}.
80. On 30 September 2014, Amy Peck (IBI), the planning consultant appointed by KCTMO, said that conditions 3 and 4 of the planning conditions had been discharged {SEA00011854}. The full details of the discharge were set out in the attached letter, but essentially Planning had approved the Reynobond smoke silver metallic panels with concealed fixings for the main cladding panels for the Tower {SEA00011855}. The final confirmation was based on a materials sheet Amy Peck had asked me to prepare {SEA00011832} {SEA00011842} {SEA00011846}. The decisions taken with regard to materials up to this point, had been taken prior to my involvement, therefore I understand that they are considered in Bruce's statement. The purpose of the materials sheet was simply to show the visual appearance of the material that had been decided on. There was no reference to the type of core of the panel that was to be used as this was purely for consideration for Planning, simply showing colour options. It would not have crossed my mind to consider the core of the panel in preparing this sort of document.

Cladding: October 2014 - windows

81. During October 2014, Simon Lawrence (Rydon) indicated that he was worried that KCTMO may have concerns or have changed their mind about elements of the design or had not been aware of design decisions they had already made

{SEA00011955}. Examples of issues included the layouts of the Lower Floors flats {SEA00011960}, the window designs and the Heat Interface Unit (HIU) positions {SEA00011987}. Rydon's view was that the issues had been caused by KCTMO {SEA00012099}. KCTMO was also making a certain amount of late changes such as to room layouts. Around this time, Simon Lawrence had also emailed me to say that he thought there was an issue with the kitchen windows being too big, as they would overshoot the dividing screen between the kitchen and lounge in the show flat {SEA00011948}.

82. Regarding the window designs, on 14 October 2014, Simon Lawrence (Rydon) emailed to say that KCTMO had asked for Rydon to look at the window options {SEA00011929}. My understanding based on re-reading the email is that there were two concerns about the windows, which were that the windows were presently designed:

82.1 With a larger opening window and a small opening window. The query was whether the small window could be fixed (non-opening); and

82.2 To be slightly larger than the previously windows. One of the concerns was that residents' blind/curtain sizing would be affected {SEA00011928}.

83. The reason that the window openings were proposed to be slightly larger than the previous windows at that point related to the way that the design for the Tower had evolved. Previously, the design had contained a wide opening 'purge' window for ventilation which was louvred (essentially, had slats across it) to prevent people falling out of it. Due to the louvres, the windows needed to be slightly larger to allow adequate ventilation and daylight in. However, KCTMO had requested that the louvres were removed from the design and in Rydon's view the disruption that would be caused by the major structural alterations necessary to install larger windows was no longer likely to be justified {SEA00012032}. Retaining the existing window surrounds would have meant a slightly less 'clean' installation as the existing surrounds would remain in place, however I recall Simon Lawrence saying that Rydon had used a similar approach successfully at Ferrier Point.

84. Simon Lawrence (Rydon) summarised how the window concerns were to be addressed in an email to Claire Williams (KCTMO) on 24 October 2014, which he later forwarded to me and Bruce (Studio E) {SEA00012032}. In the email to Claire, he proposed a form of text for explaining the proposed reduction in the window size, said he would liaise with Planning to see if the change could be dealt with relatively straightforwardly (via a non-material amendment), said that he thought Max Fordham should update its report on overheating and ventilation and expressed a view, based on his experience and reading of Building Regulations approved documents, that Building Control was unlikely to object to the changed window size.
85. On 27 October 2014, I emailed Matt Smith (Max Fordham) {SEA00012037} with diagrams showing the current thoughts on the revised window openings {SEA00002940}, as I needed their input on the overheating, ventilation and day lighting implications of the revised proposal so we could report back to KCTMO so KCTMO could make an informed decision. The performance of the glass is affected by the 'g-value' which is a measurement of the energy transfer through the glass. This has a direct bearing on light transmission heat loss or gain and the U-value of the glass. We considered this to deal with the issue of overheating in the Summer and coldness in the Winter. I stated that "*the windows have been simplified, reduced to fit into the existing window apertures with the side window amalgamated in to a larger one*". A diagram of the proposed changes was attached {SEA00002940}.
86. On 28 October 2014, Matt Smith (Max Fordham) emailed me with comments on the diagram {SEA00012040}. He said "*if the small 'purge' window is removed then the large remaining window will likely need to be in the 'turn' position for a considerable amount of time in summer. I can't imagine the TMO would be happy with this as it presents a significant fall risk*".
87. Later that day, I replied to Matt Smith (Max Fordham) {SEA00012042}. I said "*As far as I can tell in removing the louvres the TMO invalidated the fall risk as I understood the purge window may require to be opened fully behind this rather than just tilting, or are we saying the purge can be achieved just through tilting in which case can't you just tilt the larger window*". I then emailed a further

- sketch showing *"the reduced window width but maintaining the same sized purge window as requested"* {SEA00012044} {SEA00002941}. In the diagrams, the window sizes shown reflected the system being proposed by Harley in Harley's most recent set of cladding drawings {SEA00012049}.
88. On 28 October 2014, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said *"Please find attached alternate elevations and relevant sections applicable to adjacent partitions, to help you decide upon the intended window format. We have increased the vent widths to give 5000mm² ea air flow, also change the cladding [widths] to suit alignment. We still require your panel height for the vents to kitchens. Your preferred scheme will allow us to apply to all glazing."* {SEA00012052}. He also attached Harley Drawing C1059-200 revision D, C1059-SK05, C1059-SK06 and C1059-SK07 {SEA00002936}.
89. On 30 October 2014, Matt Smith (Max Fordham) emailed KCTMO with an updated analysis report on overheating and ventilation regarding the proposed new window sizes, following KCTMO's request {SEA00012070}. From the report, it appears that the key issue with the window proposal was that to ensure the overheating in the summer months was no worse {SEA00012097} than at present *"it will be necessary to either accept that a large window is potentially going to be fully opened in the turn position, or reinstate a smaller window of the same dimensions of the previous purge window that may be fully open alongside the larger window in the 'tilt' position. Both of these options could be achieved in the smaller structural opening if acceptable"*.
90. On 4 November 2014, Simon Lawrence (Rydon) circulated a summary email regarding the current status of the window design change {SEA00012097}. He said that it was now for the design team to decide on the choice of window opening mechanisms, the key issue being whether a fully opening issue would be safe for residents {SEA00012080}. In my opinion, it was safe because it was not in breach of Part K of the Building Regulations {SEA00012162}. This sets out a minimum height above finished floor level for opening windows and / or the use of window restricting devices. The latter are not favourable as they can

often be disengaged by the user thus reintroducing the risk (see {SEA00012567} for final keyed lock and Jac Loc system).

91. On 5 November 2014, I prepared a drawing for Rydon showing how the new windows would fit into the existing window openings {SEA00012095} and I also emailed Rydon attaching the revised window drawings to check if I could issue these drawings to IBI, Max Fordham and Harley {SEA00012084}. I circulated a further email on 12 November 2014 to Rydon {SEA00012122}.
92. On 14 November 2014, Claire Williams (KCTMO) had confirmed to Rydon that she wanted the new windows to fit into the existing structural openings, comprising one large tilt and turn window and a smaller turn window {SEA00012155}. Simon Lawrence (Rydon) asked me to discuss this with Building Control (see further paragraph 220 below). I sent Simon the relevant drawings for the non-material amendment application to Planning and asked him to let me know when he wanted me to send them to Amy Peck (IBI) to commence the planning application for the minor amendment {SEA00012162}.
93. On 19 November 2014, Rydon confirmed that KCTMO's instructions on the window issue were that the windows were to fit into the existing openings, leaving the existing outer frame in place (it was to be overclad), comprise a large tilt and turn window and a smaller side hung window {SEA00012176}.

Cladding: Other Autumn 2014 points

94. Throughout Autumn 2014, there had also been discussions regarding changes to the crown of the Tower {SEA00011695} {SEA00012207} {SEA00012208}. KCTMO wanted to reduce the scope of the crown and also to facilitate access for fixing abseiling ropes. This involved a steel bar set back across the top over which abseiling ropes could be placed. On 20 November 2014 {SEA00012209}, I sent Amy (IBI) the following documents:
- 94.1 Drawing PL 321 which was the crown detail I understood Amy to have already;
- 94.2 Drawing PL 324 with louvres above the main entrance lobby added;

- 94.3 Sketch SK 112 with an additional kitchen window showing a proprietary kitchen extract vent colour matched to the window frames; and
- 94.4 The remaining Mezzanine, Walkway and Walkway +1 plans for completeness.
95. There was a period around this time in Autumn 2014 when the Project appeared to stall (things didn't seem to happen for a while). I got the impression this related to a discussion between Rydon and KCTMO as to costs, but I do not know about what specifically as I was not party to these discussions.
96. On 19 December 2014, Simon Lawrence (Rydon) emailed Harley with details of the proposed kitchen extract fans for the Upper Floors. He said there were two options and that "*Dave from JSW*" is checking with the manufacturer to see if the one with a "*weather grill*" was required for high-rise buildings. I understand he said this to ensure that Harley allowed for the larger of the two options in its drawings {SEA00012579}.

Cladding: Harley's updated drawings after window approval - 13/14 January 2015

97. I understand that KCTMO received planning approval for the window changes around early January 2015 {SEA00012384}. On 13 January 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said "*Please find attached finalized all 160 off North & South windows all as agreed in our last meeting just before Christmas. The sample window will be one of these. If you have any concerns, please advise immediately as manufacture is now starting.*" {SEA00012489}. He attached a number of copied drawings. According to the Harley Drawing Register, these were also included in Kevin Lamb's email of 14 January 2014 which he described as the "*full set*".
98. On 14 January 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said "*Please find attached a full set of drawings related to the upper 20 floors of windows, all now construction issue and to be manufactured accordingly. Clearly the design has varied much, but now all as*

we agreed prior to Xmas." {SEA00012507}. He also attached a number of drawings, as set out below.

99. I replied on 16 January 2015, and attached marked up drawings {SEA00003040}, including:

99.1 I stamped Harley Drawing C1059-200 revision E as Status B {SEA00003040_0001};

99.2 I stamped Harley Drawing C1059-201 revision B as Status B {SEA00003040_0002};

99.3 I stamped Harley Drawing C1059-202 revision B as Status A {SEA00003040_0003};

99.4 I stamped Harley Drawing C1059-203 revision B as Status B {SEA00003040_0004};

99.5 I stamped Harley Drawing C1059-300 revision E as Status A {SEA00003040_0005};

99.6 I stamped Harley Drawing C1059-301 revision D as Status B {SEA00003040_0006};

99.7 I stamped Harley Drawing C1059-302 revision D as Status B {SEA00003040_0007};

99.8 I stamped Harley Drawing C1059-303 revision B as Status B {SEA00003040_0008};

99.9 I stamped Harley Drawing C1059-307 revision B as Status A {SEA00003040_0009};

99.10 I stamped Harley Drawing C1059-308 revision A as Status A {SEA00003040_0010}; and

99.11 I stamped Harley Drawing C1059-309 revision A as Status A {SEA00003040_0011}.

Cladding: Harley's updated drawings - 23 January 2015

100. On 23 January 2015 at 15:36, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said *"Please find attached revised typical windows showing reduced qty of trickle vents as agreed with Neil 14.01.15. Do we have an update yet on the restrictor requirements? We are currently working on keyed handles to the side hung windows so they cannot be opened unauthorized. It looks like additional restrictors would have to be face applied Jak Loc (keyed)! Note that we are supplying the panels to the kitchen windows in one piece for your M&E contractors to cut and fit extract vents as necessary."* {SEA00012567}. He attached revision F of Harley Drawing C1059-200 and revision C of Harley Drawing C1059-201.
101. I replied the same day, stating *"We are noticing the panel for the kitchen vent still looks really deep- have we had any confirmation on the size required for the vent that might allow the small window underneath to be a little taller?"* {SEA00012570}. Kevin Lamb (Harley) then said that the windows were already in manufacture {SEA00012578}.
102. Also on 23 January 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said *"Please find attached specification on the upper 20 floors for clarity / approval. We shall add to this as we reissue the lower elements."* {SEA00012573}. He attached the first version of a Harley Drawing C1059-100, titled *"Specifications"* {SEA00003059} (the **Harley Specification**).
103. Harley prepared the Harley Specification to identify the materials it specified for the detailed design of the cladding system. It was essentially a key or legend to a number of drawings prepared by Harley. For example, on drawing C1059-201 {SEA00003057}, which shows the typical bay for the Upper Floors on the west and east elevations, Harley used various markings such as *"PI"* and *"GI"* to refer to the materials specified in document C1059-100.
104. Within the Harley Specification, there was no further information about the designation or specification of the materials. For example, it was not stated that the materials were at risk of fire. I would expect each of the specialist

contractors, including the specialist cladding contractor, to be competent to design the element that they were contracted to undertake.

105. As shown by the Status stamps on the drawings, I was primarily commenting on these drawings from the perspective of 'architectural intent'.

106. On 26 January 2015, I emailed Harley regarding the three drawings they sent on 23 January, stating "*Please see attached comments*" {SEA00012582}. I attached marked up drawings {SEA00003060}:

106.1 I stamped the original version of the Harley Specification as Status B {SEA00003060_0001};

106.2 I stamped the revision C of C1059-201 as Status A {SEA00003060_0002}; and

106.3 I stamped the revision F of C1059-200 as Status A {SEA00003060_0003}.

107. On 9 February 2015, I attended site and viewed the window installations in Flat 145, and took photographs {SEA00000239} {SEA00000241}. I would have taken these as a record for Studio E, for example to show people in the Studio E office to keep them aware of progress or to assist me in spatial coordination. At or shortly after viewing the window, I raised a concern that the symmetry of the windows was not consistent with the planning drawings, now that the trickle vents requirement had been changed {SEA00012687} {SEA00012691}. From the design intent perspective, I was concerned that this might have planning implications, because it was different to what had been submitted {SEA00012697} {SEA00012698}. Harley agreed to action this {SEA00012702} {SEA00012703} {SEA00012705} {SEA00012723}.

Cladding: Harley's updated drawings - 17 February 2015

108. On 17 February 2015 at 11:04, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) which said "*Please find attached revised type 10 windows, now with symmetry as requested. Please approve and forward your official instruction for us so as we can proceed with remakes of those in*

manufacture." {SEA00012751}. He attached Harley Drawing C1059-200 revision G {SEA00003094}.

109. I replied later that day, stating "*Please see attached comment*" {SEA00012756}, and attached a marked up copy of Harley Drawing C1059-200 revision G, which I had stamped Status B because there were comments which were still to be incorporated {SEA00003093}.
110. Subsequently, also on 17 February 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon), stating "*the window mods are now approved by Neil*" and "*all we need is [Rydon's] official go ahead to proceed*" {SEA00012758}. He attached Harley Drawing C1059-200 revision H {SEA00012760}. Simon Lawrence replied "*Neil has completed his comments and is happy. So you can proceed.*" {SEA00012761}.
111. As above, I do not consider that it is appropriate to describe this process as me having "*approved*" Harley's design of the window. I consider that this process is more accurately described by the language I used in the comments on the drawings at the time, which is that Harley, or indeed any specialist designer, produces its detailed design, on which I comment from the perspective of the 'architectural intent'. If the design is in accordance with 'architectural intent', then I would mark it as "Status A".

Cladding: Harley's updated drawings - 3 March 2015 (f rebreaks)

112. On 3 March 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said "*Please find attached drawings now showing the fire breaks, both horizontal and vertical. We assume a requirement of 90min integrity & 30min insulation is sufficient, if not please advise. The vertical breaks are not on all columns, just party walls.*" {SEA00012850}.
113. I replied to a query regarding the windows from Simon Lawrence (Rydon) on 6 March 2015 at 11:45, stating "*As per telephone conversation I have asked the question of Exova on the fire break but not had anything back. To me the fire breaks would have to follow the ratings of the party walls which are shown on the fire plan attached. You can see some of the low level apartments are*

separated by 120mins and others by 60mins." {SEA00012906}, and attached revision 4 of the fire strategy drawings {SEA00003101}. I referred the query to Exova as they had produced the fire strategy and so would be best placed to respond to the query. Essentially, I was trying to be proactive in resolving the issue of cavity barriers in a neutral way, which I discuss further from paragraph 229 below.

114. Later on 6 March 2015, I referred the query to Paul Hanson (Building Control). I discuss this further at paragraph 202 below, however this issue was not fully clarified until the start of April 2015.

Cladding: Harley Specification updated - 3 March 2015

115. On 3 March 2015 at 17:45, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) {SEA00012868} regarding the Walkway +1. I understand the Walkway +1 level, which was part of the Lower Floors, was not involved in the Fire. He also attached revision B of the Harley Specification.
116. Building Control requested vertical firebreaks (actually fire rated cavity barriers) on the columns, even where there was no party wall. The logic for this was unclear although I believe this request was ultimately reflected on the drawings.
117. I replied to Kevin Lamb (Harley) on 6 March 2015 at 15:46, stating "*please see attached drawing comments*" {SEA00012911}, and attached marked up drawings {SEA00003160}, including revision B of the Harley Specification {SEA00003160_0001}, which I had stamped Status B because there were some comments which were still required to be incorporated.
118. On 12 March 2015, Jason North, Site Manager (Rydon), emailed me stating "*We are installing windows at the moment and I cant seem to find anywhere a detail for insulation behind the fixed panel alongside the windows. can you point me in the right direction with this.*" {SEA00012940}. I have not found a response but I believe I would have pointed him towards Studio E's 1:20 section drawings.

Cladding: Harley's updated drawings - 24-25 March 2015

119. On 24 March 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said "*Please find attached final drawings for the W1 windows, all construction status based upon both comments and site survey. This is what is in manufacture*" {SEA00012981}. The majority of drawings concerned the windows on the Walkway +1 Level, which I understand was not involved in the Fire. He also attached Harley Drawing C1059-330, which was of the crown {SEA00003198}.
120. I replied on 27 March 2015, stating "*Please see attached drawings with comments as discussed on Tuesdays meeting*" {SEA00013023}, and attached marked up drawings {SEA00003181}, including the Harley Specification {SEA00003181_0006}, which I had stamped Status B because there were comments which were still to be incorporated.
121. On 25 March 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said to me "*further to our meeting yesterday, please find attached details for the firebreaks, all now upgraded to 120min*" {SEA00013001}. There had been an M&E / façade meeting which took place on 24 March 2015, according to my list of Outlook appointments {NCI/28}.
122. I replied on 27 March 2015, stating "*please see attached comments*" {SEA00013026}, and attached marked up drawings {SEA00003180}:
- 122.1 I stamped revision C of the Harley Specification as Status A {SEA00003180_0001};
- 122.2 I stamped revision F of the Harley Drawing C1059-301 as Status A {SEA00003180_0002};
- 122.3 I stamped revision D of the Harley Drawing C1059-304 as Status A {SEA00003180_0003}; and
- 122.4 I stamped revision D of the Harley Drawing C1059-305 as Status A {SEA00003180_0004}.

Cladding: Harley's updated drawings - 29 May 2015

123. On 29 May 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said to me "*Please find attached drawings for the Crown element for approval*" {SEA00013221}. He attached various Harley Drawings, as set out below {SEA00003242}. Around this time, there had been a suggestion of a 40mm reduction in the height of the crown {SEA00013218}. I was not sure what the position was and wanted to discuss with Rydon before reverting to Harley {SEA00013219}.
124. I replied on 12 June 2015, stating "*please find attached comments on the Crown drawings*" {SEA00013221}, and attached marked up drawings {SEA00003242}:
- 124.1 I stamped Harley Drawing C1059-216 as Status B {SEA00003242_0001};
- 124.2 I stamped Harley Drawing C1059-217, although I did not mark it as a specific Status I believe I intended to mark it as Status A because I had no comments to make on it {SEA00003242_0002};
- 124.3 I stamped Harley Drawing C1059-218 as Status B {SEA00003242_0003};
- 124.4 I stamped Harley Drawing C1059-332 as Status B {SEA00003242_0004};
- 124.5 I stamped Harley Drawing C1059-333 as Status A {SEA00003242_0005};
- 124.6 I stamped Harley Drawing C1059-334 as Status A {SEA00003242_0006};
- 124.7 I stamped Harley Drawing C1059-335 as Status A {SEA00003242_0007};
- 124.8 I stamped Harley Drawing C1059-336 as Status A {SEA00003242_0008}; and
- 124.9 I stamped Harley Drawing C1059-337 as Status A {SEA00003242_0009}.

Cladding: Harley Drawing - 1 July 2015

125. On 1 July 2015, Kevin Lamb (Harley) forwarded me an email he had sent to Simon Lawrence (Rydon) (intending to copy me in) which said "*please find attached revised coping detail to the Crown element. If you could have a quick look and pass your comments, we shall then reissue the whole of this element for construction, based upon your previous approvals. Having a shorter coping will allow it to run between columns being far more tidy, also not interfering with the existing grilles*" {SEA00013259}. He attached Harley Drawing C1059-332 {SEA00013261}.
126. I replied later that day, stating "*please see attached*" {SEA00013262}, and attached Harley Drawing C1059-332, which I had stamped Status A {SEA00003244}.

Cladding: Harley Specification updated - 15 July 2015

127. On 15 July 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said to me "*Please find attached drawings for the WALLPLANK elements for comment / approval*" {SEA00013291}. I understand the wallplank, which was a panel used in the Lower Floors cladding, was not involved in the Fire. He also attached revision D of the Harley Specification {SEA00003255}.
128. I replied on 17 July 2015, stating "*Please find attached comments on the plank drawings*" {SEA00013304}, and attached marked up drawings {SEA00003260}, including revision D of the Harley Specification {SEA00003260_0001}, which I had stamped Status A.

Cladding: Harley Specification updated - 5 August 2015

129. On 5 August 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said to me "*Please find attached curtain wall drawings for comment / approval*" {SEA00013312}. I understand the curtain wall was not involved in the Fire. He also attached revision E of the Harley Specification {SEA00003269}.

130. I replied on 7 August 2015, stating " *Please find attached drawing comments as requested*" {SEA00013333}, and attached marked up drawings {SEA00003272}, including revision E of the Harley Specification {SEA00003272_0001}, which I had stamped Status B because as set out in my comments, there were certain aspects that did not meet the design intent.

Cladding: Harley Specification updated - 18 August 2015

131. On 18 August 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and said to me "*Please find attached curtain wall drawings all now issued for construction based upon your comments 07.08.15*" {SEA00013350}. I understand the curtain wall was not involved in the Fire. He also attached revision F of the Harley Specification {SEA00003281}.
132. I replied on 19 August 2015 {SEA00013374}, stating "*Correct comments attached this time*" because I had accidentally sent the wrong attachment with my first email {SEA00013371}, and attached marked up drawings {SEA00003287}, including revision F of the Harley Specification {SEA00003287_0001}, which I had stamped Status A because I had no comments to make.

Cladding: Harley Specification updated - 20 October 2015

133. On 20 October 2015, Kevin Lamb (Harley) copied me into an email to Simon Lawrence (Rydon) and attached "*G F [ground floor] Curtain wall elements for comment / approval*" {SEA00013470}. I do not understand that the ground floor curtain wall was involved in the Fire. He also attached revision G of the Harley Specification {SEA00003318}.
134. I replied on 22 October 2015, stating "*please see attached comments on ground floor*" {SEA00013498}, and attached marked up drawings {SEA00003327}, including revision G of the Harley Specification {SEA00003327_0001}, which I had stamped Status B. I commented on glazing panel "G2", which was a panel involved in the glazing of the Lower Floors.
135. On 26 November 2015, Kevin Lamb (Harley) emailed me with a further revision of the ground floor curtain wall drawings {SEA00013625}. He disagreed with

my comment on glazing panel "G2", and I replied on 2 December 2015 saying I understood this {SEA00013652}.

Cladding: Harley Specification updated - 28 January 2016

136. On 28 January 2016, Kevin Lamb (Harley) copied me into an email to Stephen Blake (Rydon) and attached drawings for the internal atrium screen "*for final approvals*" {SEA00013961}. The internal atrium screen was located in the podium and I do not believe that it was involved in the Fire. He also attached revision I of the Harley Specification {SEA00003387}. The notes section states that a new type of panel was added to the specification, which was a type of laminated glass for the internal atrium screen. I replied later that day {SEA00013971}, attaching marked up drawings {SEA00003389}, including revision I of the Harley Specification {SEA00003389_0001}, which I had stamped but did not mark Status, although believe I had intended to mark it Status A because I had no further comments to make.
137. On 3 February 2016 Kevin Lamb (Harley) emailed Stephen Blake (Rydon) attaching drawings for the internal atrium, as well as "... *the joint detail at the top of the GRC column casings (drg 306)*". Harley invited the recipients to confirm their preference between matching the drip profile colour to the cladding or the GRC. I was initially not sent this email but Kevin forwarded it to me later that day. I responded the following day, attaching a drawing with my comments, saying "*Worried this may look a little naff where riveted on*" {SEA00014024}

E4 M&E works

138. I understand that Rydon appointed JSW to design/install M&E works, which included the main smoke and ventilation system. I understand that PSB UK Limited (PSB), which was part of Witt UK Group, was JSW's specialist subcontractor for elements of the system, which originally ran through the Upper Floors and was extended to cover the Lower Floors during the Project.
139. Unlike Studio E, Max Fordham remained in a direct relationship with KCTMO (also known as "*client-side*") and was not technically part of Rydon's design team, although provided some input into the M&E detailed design as outlined below.
140. In keeping with Studio E's role Post-Contract, at this stage my role was providing comments on detailed design proposals when requested, coordinating the design to avoid clashes, and being mindful of the interface of the detailed design with the position approved by Planning. There are a number of elements of the M&E works which I do not comment on in this statement, such as the drainage layouts for the Lower Floors, because I understand they are not relevant to the Inquiry.

August 2014

141. At the design team meeting on 13 August 2014, David Bradbury (JSW) said that he had some concerns about proposed alterations to the dry riser. The riser is a specialist item. The minutes suggest it was not known "*whether building control would enforce the [existing dry riser] to be upgraded to a wet riser*" and that this should be discussed with Building Control as soon as possible {SEA00011545}. JSW discussed this with Building Control around 2 to 3 September 2014, as set out further from paragraph 210 below, but in short Building Control said that the Building Regulations did not mandate improvements to existing dry risers {SEA00011569}.

September 2014

142. JSW did not attend the design team meetings on 2 or 23 September 2014 {SEA00011581}. Simon Lawrence (Rydon) said "*Currently the M&E design is*

at a stage which relies more on Max Fordham (Client's Consultant) than the rest of our Design team so there will not be any M&E design at the start" {SEA00011753}. Around this time, Max Fordham was, for example, providing information about the type of glass to be specified, and air tightness requirements in order to clarify aspects of the Employer's Requirements which were based on its design input {SEA00011812}.

November 2014

143. On 18 November 2014, I forwarded Building Control's comments on Submission 1 to JSW (see further on Submission 1 from section F3 below).

December 2014

144. On 1 December 2014, David Bradbury (JSW) emailed me and Simon Lawrence (Rydon) with JSW's comments on the shafts for the smoke and ventilation system following a meeting with Building Control {SEA00012259}. The proposed changes impacted the layout of the Lower Floors, so JSW would have copied me in so that I could spatially coordinate the layout drawings. I was not involved in the technical design of the smoke and ventilation system because it was outside Studio E's scope. I responded to David on the same day {SEA00012275}.

January 2015

145. On 19 January 2015, Matt Smith (Max Fordham) emailed David Bradbury (JSW) {SEA00012534} with comments on the construction drawings for the M&E works {SEA00012535}.
146. On 22 January 2015, Matt Smith (Max Fordham) emailed me and Claire Williams (KCTMO) regarding a proposal by RJ Electrics (an electrical contractor) for alternative light fittings to the lobbies {NCI/6 - 7}. Claire Williams said the KCTMO maintenance team was considering the proposal {NCI/6 - 7}, and I said I did not object to it being included in the mock-up outside flat 145 {NCI/8 - 9}.

147. On 30 January 2015, I forwarded a query from Curtins (structural engineer) to David Bradbury (JSW) regarding the size of holes required for additional openings required in the Lower Floors for the smoke ventilation system {NCI/10 - 15}. David Bradbury said he would check the details with his specialist, which I think was PSB {NCI/10 - 15}.

February 2015

148. On 13 February 2015, I emailed David Bradbury (JSW) a marked up set of fire drawings {SEA00012726}. The drawings contained some comments on the areas of the smoke ventilation system that I thought were problematic because of clashes, for example where there was a steel beam in the way of the proposed shaft location on some of the Lower Floors {SEA00003090}. I asked him to confirm which holes could be reduced / removed.
149. On 16 February 2015, David Bradbury (JSW) emailed me JSW's draft drawings for builders' work in the Lower Floors for the smoke ventilation system {SEA00003092}. He said he would have to check with Hugh Mahoney (PSB), who was also copied into the email with a direct query raised of him, regarding the sizes of the holes before formally issuing the drawings {SEA00012730}. However, David Bradbury confirmed that Hugh Mahoney was happy with the sizes / positioning of the holes on the same day {SEA00012734}. The purpose of me being copied in would likely have been so that I could coordinate the position of the smoke ventilation system ducts.
150. Later on 16 February 2015, I emailed Rydon and JSW regarding the smoke extract requirements {SEA00012735}. I also wrote that "*we probably need another meeting with Building control to agree the PSB solution*" and flagged that the current smoke shaft enclosures were 600x1000mm rather than 600x1200mm. The reason that I suggested another meeting with Building Control was needed was because I was trying to close out the issue of the smoke shaft enclosures to avoid issues that would require changes to the layout of the Lower Floors. In response, David Bradbury (JSW) said the smoke shaft enclosures were ok and that Building Control did not envisage any issues with the PSB solution provided their previous comments had already been taken on

board, although he asked PSB to get in touch with Building Control to make sure they were happy {SEA00012736}.

151. On 17 February 2015, David Bradbury (JSW) copied me into an email from PSB regarding an idea from Hugh Mahoney (PSB) regarding putting fans on the roof of the plant room for one of the smoke ventilation system risers {SEA00012762}. David Bradbury said he was not sure that would be allowed. I presume that the reason he said this, and the reason he copied me in, is because he thought we would be limited by Planning.
152. On 24 February 2015, I emailed Rydon and JSW attaching revised drawings to show the new smoke vent positions in the Lower Floors {SEA00012785}. Subsequently and over the next few weeks, Curtins, Rydon, JSW and others continued to discuss issues including the routing of the duct through the Lower Floors {SEA00012811}, {SEA00012900}, {SEA00012903} and the location of fans {SEA00012823}. Studio E remained involved from an 'architectural intent' perspective, rather than technical considerations concerning the smoke ventilation system.

March 2015

153. On 6 March 2015, Simon Lawrence (Rydon) emailed Paul Hanson and John Hoban (Building Control) directly with copies of the floor plans for the Lower Floors {SEA00000247}. Essentially, whilst the routing of the smoke ventilation system duct through the Lower Floors (flat side or lobby side) still needed to be finalised, he wanted an indication that Building Control would approve the overall scheme so that materials for the Upper Floors could be purchased. I discuss this further below.
154. Later on 6 March 2015, Simon Lawrence (Rydon) emailed JSW, Curtins and me regarding the routing of the smoke ventilation system duct through the Lower Floors {SEA00012908}. He said "*In order for the building to be safe in the event of a fire we need to be able to connect the AOV shaft to all floors. It is also requirement by Building Control Officer. We therefore have no choice but to find a solution to this design issue*". Rydon proposed its own various potential solutions inviting responses. These issues were not of an architectural nature,

therefore discussions on this continued with the input of those it was most relevant to {SEA00012909} {SEA00012913} {SEA00012939}.

155. On 9 March 2015, Matt Smith (Max Fordham) emailed David Bradbury (JSW) regarding M&E related requirements for ventilation to the lobby bulkheads {SEA00012916}. David Bradbury said that ventilation was to be installed, but had not been shown on the mock-up floor because it was a mock-up {SEA00012917}.
156. On 16 March 2015, David Bradbury (JSW) circulated updated copies of JSW's drawings including the mechanical services layouts for the Upper Floors {SEA00003168} {SEA00003169}.
157. On 30 March 2015, I emailed David Bradbury (JSW) and asked him if I should update Studio E's drawings per JSW's markup of a potential smoke ventilation system route through the Lower Floors {SEA00013030}. David Bradbury said he needed confirmation from PSB {SEA00013032}. David Bradbury confirmed the route on 1 April 2015 {SEA00013055}, and also circulated a copy of a drawing of the main plant room {SEA00013058}.

April 2015

158. Subsequently, there was further conversation about builders' work for the M&E duct route {SEA00013063} {SEA00013085} {SEA00013090} {SEA00013120}. As before, my input focused on identifying whether, for example, the locations of the openings had been picked up incorrectly {SEA00013090}.
159. On 17 April 2015, Duncan Campbell (Max Fordham) emailed David Bradbury (JSW) with comments on the drawings which mainly concerned ground floor electrical wiring {SEA00013095} {SEA00013098}. In one of his covering emails, he said *"As I haven't been involved in the detail and the layouts have changed significantly since tender, excuse me if I'm pointing out the obvious in some areas"*.

May 2015

160. On 8 May 2015, David Bradbury (JSW) forwarded me an email chain regarding the Kitchen Extract Panel fan {SEA00013145}. From the email chain it appears that he had asked Simon Lawrence (Rydon) and Matt Smith (Max Fordham) if they had any comments on the fan (the Nuaire CYFAN extract fan with window mounting kit) before he placed the order, and Matt Smith had said that Studio E should be copied in "*regarding colour/integration with the facade system*". My input was again from an architectural intent perspective and I replied stating that the components sitting on the external facade needed to be coloured "*RAL 7012 Basalt Grey 30% gloss to match external cladding*" {SEA00013148}. JSW said they would get the louvres to Rydon to apply the colouring as soon as possible {SEA00013149}.

August 2015

161. On 12 August 2015, Matt Smith (MF) emailed David Bradbury (JSW) and said "*Further to our telephone conversation regarding the dry riser inlet valve; as long as the proposed position is within 18m of the fire appliance and clearly visible from this position then we are happy with a location on the South facade rather than the East as we had indicated previously*" {SEA00013339}. I do not recall any of the background to this exchange, I may not have been party to it at the time.

August/September 2015

162. By late August 2015, I understand discussions on the route for the smoke ventilation system shaft were beginning to draw to a close {SEA00013426} {NCI/16 - 21} {SEA00013462}.
163. On 30 September 2015, I was party to an email from JSW where Hugh Mahoney (PSB) confirmed that the smoke ventilation system shaft at Walkway +1 could be reduced to 400 x 1000 mm but no further {SEA00013468}. As stated, Studio E was not involved in the technical details of the smoke ventilation system, so I did not have a view on whether or not this was appropriate.

November 2015

164. On 3 November 2015, Rydon held a "JSW Progress Meeting" on site {SEA00013566}. I was not invited to the meeting but was provided with a copy of the minutes.
165. On 6 November 2015, I attended site and took some photographs. I would have taken these as a record for Studio E, for example to show people in the Studio E office to keep them aware of progress or to assist me in spatial coordination {SEA00000299} {SEA00000301} {SEA00000316} {SEA00000318} {SEA00000319} {SEA00000321}.
166. During November 2015, Rydon asked RJ Electric (RJE), Max Fordham, JSW and others to finalise access control to the Tower (which essentially meant how the door entry was going to work) {SEA00013518}, door access strategy {SEA00013569}.

December 2015

167. On 1 December 2015, Rydon held a "JSW Progress Meeting" on site {SEA00013655}. I was not invited to the meeting but was provided with a copy of the minutes. In the covering email of 4 December 2015, Stephen Blake (Rydon) said there was one overriding priority: *"get the AOV system functional to the occupied area of Grenfell"* {SEA00013654}. David Peacock (JSW) replied stating *"Parkerr the ventilation company were on site this morning and I understand that they will be on site Monday to make a start installing the dampers. In the meantime Richard has loaded out the roof fans and electrical panel for the AOV system in readiness"* {SEA00013656}.
168. On 8 December 2015, David Hughes (Rydon), Andy Bridges (RJE) and Alan Whyte (RJE) held a meeting on site. I was not at the meeting but was copied into an email containing notes of what was discussed. The note contains an update on the status of the smoke ventilation system and dry riser works {SEA00013713}.
169. On 16 December 2015, Rydon held a design team meeting {SEA00013778}. Among others, Tony Batty and Jon White, who were from John Rowan and Partners, the clerks of works, who I believe were appointed by KCTMO, received a copy of these minutes. Regarding the smoke ventilation system, the

minutes of the meeting state that Max Fordham and Building Control had signed off the design for the "*revised system*" and that "[David Bradbury was] *to send approved drawing*" {SEA00013778_0002}. The minutes state that commissioning of the smoke ventilation system was to start during the week commencing 11 January 2016. The minutes also state that "*All actuators for smoke control need to be 12v/24v and battery back up to comply*", "*The smoke control systems will be stand alone systems and will not be integrated in the main smoke extraction/ventilation system*" and "*Location for individual control panels to be agreed for fire brigade – MS/AB to confirm fire brigade*". Based on the list of attendees, I believe MS/AB refers to Matt Smith (Max Fordham) and Andy Bridges (RJE).

170. Following this, on 21 December 2015, David Hughes (Rydon) circulated {SEA00013790} revision 4 of the fire strategy {SEA00013791} and the details of extract/duct work {SEA00013792}.

January 2016

171. On 5 January 2016, Rydon held a JSW progress meeting on site {SEA00013831}. I was not invited to the meeting but was included in the distribution list for the minutes. Section 2 of the minutes provides an outline of the smoke ventilation system works and states "*Commissioning to be arranged once all builders' works, ductwork and dampers fitted. Rydon to confirm when all builders' works are due to be finished. JSW to arrange commissioning*".
172. On 19 January 2016, Rydon held a JSW progress meeting on site {SEA00013853}. I was not invited to the meeting but was included in the distribution list for the minutes. The minutes state "*Location for main fire panel is in entrance lobby backing onto hub room. Preference is for a flush panel, or if face fitted then alcove constructed for panel. This is reduce obstruction to main through fare to lifts. [Andy Bridges (RJ Electrics)] to clarify*".
173. On 28 January 2016, I forwarded Building Control's email regarding Submission 2 to JSW, for JSW's information/records {SEA00013956} (I discuss Submission 2 further from section F3 below).

174. On 29 January 2016, Rydon held a JSW progress meeting on site {SEA00013974}. I was not invited to the meeting but was included in the distribution list for the minutes. The minutes state that the main extract / smoke ventilation system was due to be commissioned shortly.

E5 Curtins designed the detail of the structural elements for the Lower Floors

175. During the time that I was mainly involved in the Project, Curtins was involved in preparing the detailed design for the structural elements of the Lower Floors. For example, from time to time, Suleyman Ekingen (Curtins) would send updated drawings to Rydon and Studio E, and ask for "*review and comment*" {SEA00011338} or for "*coordination*" {SEA00012545}.
176. If I were to comment on the drawings, I would do so principally from an 'architectural intent' perspective. I would make any comments as mark ups on the drawings (eg. see attachments to {SEA00011663} or {SEA00011885}, {SEA00011895, SEA00011900}) and send identified drawings to assist in clarifying points {SEA00011789}.
177. One of the key structural elements that needed coordination was that of the smoke ventilation system routes through the Lower Floors {SEA00012900} {SEA00012939} {SEA00013085} {SEA00013439}. The routing changed several times for this at lower levels. In order to coordinate the elements of the route requested by the JSW with the structure of the Lower Floors and existing concrete slab at the bottom of the Upper Floors, I would incorporate JSW's changes into the general arrangement drawings and highlight any comments from an 'architectural intent' perspective.
178. As is usual in my experience, there were also conversations that Curtins was involved in with other members of the design team to which Studio E was not particularly involved. For example, on 17 September 2014 Daniel Anketell Jones (Harley) emailed Suleyman Ekingen (Curtins) attaching the wind load calculations Harley was using to design the cladding and windows {SEA00011700}.
179. I am not aware of whether Curtins had direct contact with Building Control regarding their detailed design. Whilst the Deed of Appointment between Rydon and Studio E placed responsibility for the submissions to Building Control with Studio E, as outlined at paragraph 39 above, other parties had direct contact with Building Control from time to time. For example, from my emails, I am aware that in October 2014 Suleyman Ekingen (Curtins) intended to issue calculations

to Building Control for "*consideration and approval*" {SEA00011892} but Simon Lawrence (Rydon) wanted to know what calculations were being submitted {SEA00011894} and, based on an email chain between Suleyman and Simon that I was later forwarded, Simon appeared to indicate Rydon only wanted calculations to be submitted to Building Control if "*the rest of the design team*" was "*happy that there won't be any further changes which will affect the*" calculations {SEA00011910}. Later in October 2014, Simon Lawrence emailed Curtins and me and indicated that there would be some further changes to the layout of the Lower Floors, among other things, and Curtins acknowledged that may have been why Rydon did not want Curtins to send calculations to Building Control at that stage {SEA00011988}. I was also copied into emails where Curtins asked Rydon whether Curtins' structural calculations had been submitted to Building Control in February 2015 {SEA00012729} {SEA00012779} and March 2015 {SEA00013020}. I do not know how this was resolved, but if this was mainly an issue concerning the Lower Floors, I understand it was not likely to be relevant to the Fire so I have not commented on it further.

F BUILDING REGULATIONS AND ASSOCIATED GUIDELINES

180. At paragraph 39 above I explain what I considered my obligations were with regard to Building Regulations and the coordination of the approvals process.

181. I considered that the Tower did comply with the relevant Building Regulations because, as I set out in further detail below:

181.1 I do not recall being contacted by Rydon or Building Control to provide any further information to Building Control after Building Control's feedback on Submission 2, in January 2016;

181.2 On 4 March 2016, the London Fire Brigade (LFB) wrote to Building Control {SEA00014149} to confirm that they were satisfied with the drawings submitted in respect of the Tower {SEA00014149} {SEA00014148}; and

181.3 While I do not recall seeing the certificate, I understand that the Tower was certified as practically complete, which would require Building Control to have signed the Tower off as compliant with Building Regulations.

182. Below, I explain in separate sections the interactions I had with third parties, Exova, Building Control and (indirectly) with the London Fire Brigade regarding Building Regulations compliance.

F1 Third Parties

183. As to the reliance I put on advice from third parties about the compliance of the design of the refurbishment of the Tower with relevant Building Regulations and associated guidance, in particular the parts of the Building Regulations relevant to fire safety, and the nature of such advice, my evidence on this is set out throughout this witness statement, however, below I have tried to gather my recollections regarding specific third parties.

Rydon

184. I note that Rydon had experience with refurbishments and Building Regulations. For example, in an email dated 24 October 2014, Simon Lawrence (Rydon) told Claire Williams (KCTMO) he had looked at the Building Regulations approved documents, presumably regarding daylighting, ventilation and thermal properties, to make proposals to change the size of the windows in a manner consistent with the Building Regulations (see further from paragraph 84 above) {SEA00012032}.

Max Fordham

185. From time to time, Max Fordham also provided advice with regard to the operation of the Building Regulations.

Subcontractors

186. I relied on the experience and competency of all of the specialist design subcontractors to produce designs that complied with both the Employer's Requirements and Building Regulations. As I understand is of particular relevance to the Request, I relied on Harley to produce designs and specifications for the cladding that complied with both the Employer's Requirements and Building Regulations.
187. I did not consider that I was under a specific obligation to check the products Harley had chosen to fulfil the Employer's Requirements, and form a view as to whether they complied with Building Regulations. Instead, I considered my role to be to comment on those drawings from the perspective of 'architectural intent'.

In addition, with regard to Building Regulations my role was to coordinate the approvals process for Harley's drawings, by providing the necessary information Building Control required regarding those drawings, and co-ordinating Harley's response to any queries raised by Building Control. Once Building Control was satisfied that Harley's drawings complied with Building Regulations, I would have no reason to consider further whether the designs in question were compliant or not; I would have fully complied with my duty to coordinate the approvals process. However, if I noticed anything that was obviously not compliant with the Building Regulations I would raise this with the specialist designer and / or Building Control as necessary. Below I detail my various involvements with Building Control.

F2 Exova

188. As above, Exova, the KCTMO's fire engineer, continued to provide advice on fire safety and fire engineering issues throughout the Project. I did know that Exova was not appointed by Rydon as at 19 September 2014 {SEA00011748}. It was possible that Exova remained appointed by KCTMO, due to the nature of some of the contemporaneous correspondence and Exova's lack of objection to assisting, which I have summarised below.
189. On 18 September 2014, I forwarded Harley drawing RFI 001, regarding firebreaks (although I understand the technical term for what we were discussing is "*cavity barriers*" so I have used this word in my witness statement), to Terry Ashton (Exova) and asked for Exova's comments {SEA00011705}. The reason that I forwarded this to Terry was because I was seeking to coordinate the cladding contractor's proposals (Harley) with the input of the fire consultant (Exova), and to cross check Harley's proposal because the interpretation of Building Regulations is a highly technical specialism. Terry said he had "*never seen details*" of what was being done to the external walls and asked for drawings {SEA00000190}. I forwarded him the Harley preliminary drawings of the elevations and sections for the cladding {SEA00002851} and said they were "*fairly limited but they attempt to establish the basic approach*" {SEA00011710}.
190. Later on the afternoon of 18 September 2014, Terry Ashton replied to me regarding the Harley drawing RFI 001, stating:
- "If the insulation in the cavities behind the rainscreen cladding is combustible you will need to provide cavity barrier as shown on your drawing (number 1279 (06) 120) in order to prevent fire from spreading from one flat to the one above even if there isn't a continuous cavity from the top to the bottom of the building."*
191. I forwarded this comment to Harley {SEA00011719} and thanked Terry {SEA00011721}.

192. In response to the comment, Daniel Anketell-Jones (Design Manager at Harley), stated *"The insulation is class 0. Therefore after reading the correspondence below; I believe that the fire barrier in these locations, will not be necessary. Can you confirm that this is acceptable?"*. Again, I forwarded the comment to Exova {SEA00011724}, together with the datasheet for Celotex RS5000 dated August 2014 that Daniel had attached to his email {ECA0000003715.0001}.

193. While I do not recall specifically reviewing this datasheet at the time, I note now that it includes the following statements regarding the Celotex RS5000 product, which I think would have given me no reason to consider the product further based on the knowledge I had at the time:

193.1 *"(suitable for buildings above 18 metres in height)"*, a statement which is repeated in the header of all pages of the document;

193.2 *"RS5000... is the first PIR insulation board to meet the performance criteria in BR 135 for insulated rainscreen cladding systems and therefore is acceptable for use in building above 18 metres in height."*, statement which is repeated more than once;

193.3 *"Class O fire performance"*;

193.4 *"Has Class O fire performance throughout the entire product in accordance with BS476"*;

193.5 *"RS5000 has been successfully tested to BS8414-2 and meets the performance criteria of BRI35"*; and

193.6 *"Fire propagation BS476:6 Part 6 Pass"*.

194. In response, which I also forwarded by copy straight to Harley and Rydon, Exova stated {SEA00000192}:

"A material which has a Class 0 rating is not necessarily non-combustible although the reverse is invariably true. Some Class 0 products will burn when exposed to a fully developed fire. In any case, you need to prevent fire spread from one flat to the flat above as I stated

in my earlier email. What isn't clear from the information to hand is whether or not there is a continuous cavity from top to bottom in any part of the cladding (apart from around the column casings) irrespective of the type of insulation?"

195. I then asked Harley to "*confirm [Harley's] position in relation to Terry's comment below regarding combustibility and continuous cavity paths*" {SEA00011730}. I flagged that this was in my experience something which Building Control focused on. I return to this issue below.

Revision B drawings

196. On 19 September 2014, I emailed Terry Ashton (Exova) and attached the revised fire strategy plans. I outlined the changes to the concierge and office areas on the Ground, Mezzanine and Walkway levels and asked him to "*confirm that my escape distance, wall and door ratings assumptions are correct?*" {SEA00011742}. Essentially, I had made very minor changes to the drawings in order to update them and wanted Exova to confirm the changes I had made.
197. On 19 September 2014, Simon Lawrence (Rydon) emailed me and said, regarding Exova, "*I know that they provided information in the tender for KCTMO but I don't know if they are still working for them. I know that we haven't employed them. So if you are getting some free advice then great otherwise we will need to look at this.*" {SEA00011749}. I replied on 22 September "*Thanks for the heads up*" and again flagged the importance of getting Building Control to agree the fire approach {SEA00011749}, to which Simon Lawrence said we would chat about after the design team meeting on 23 September 2014 {SEA00011754}.
198. On 29 September 2014, Terry Ashton (Exova) responded and said "*The proposed changes highlighted in your email are acceptable from a fire strategy point of view*" {SEA00000214}. He also provided some further comments regarding the need for fire resisting construction between the kitchen and hub room at ground floor level, which I said we would take forward for Building Control discussions {SEA00011853}.

Vent to escape stairs

199. In October 2014, there was a discussion about a large vent that was to be bricked up as part of the proposals to relocate the stair layout in the Lower Floors {Photo at SEA00000219}. I referred the query to Exova {SEA00011945}, who confirmed it could be blocked up {SEA00000222}, which I confirmed to Rydon {SEA00012117}.

Submission 1

200. On 20 November 2014, I emailed Terry Ashton (Exova) with Building Control's feedback on Submission 1 {SEA00012189} (see further on Submission 1 from section F3 below). He replied later that day {SEA00000231}, which I forwarded to Simon Lawrence (Rydon) {SEA00012197} and Building Control {SEA00012200}. Amongst other things, Exova's comments stated that "*there is no mechanism (such as a fire alarm system)*" for the whole Tower to be evacuated in the outbreak of a fire at Walkway level and that Exova thought Max Fordham had already sent something to Building Control to justify the extract rate for the existing residential stairway lobbies.

Fire escape stairs

201. On 3 February 2015, I emailed Terry Ashton (Exova) a query regarding fire doors to the risers of the lobbies on the Upper Floors {SEA00012653}. I believe this followed a conversation with Simon Lawrence (Rydon) {SEA00012651}. Exova's response was "*If the risers are fire-stopped at every level, there would be no need for the access doors to be fire rated as well*", which I forwarded to Simon Lawrence (Rydon) {SEA00012655}.

Cavity barriers

202. On 3 March 2015, I emailed a query to Exova regarding the cladding firebreaks {SEA00012858}. I discuss this issue further in section F3 below.

F3 Building Control

Background and Building Control's preferred approach

203. I understand from Bruce (Studio E) that RBKC required that the Project use their Building Control, rather than an approved inspector. The individuals at Building Control that I communicated with included Paul Hanson and John Hoban. I understood that Paul Hanson was a fire engineer and that John Hoban tended to refer fire related issues to Paul Hanson {SEA00011560}.
204. Although I had worked with John Hoban (Building Control) during the KALC project, I first started to discuss the Project with him in/around July 2014 {SEA00000173}. On 17 July 2014, I wrote to him that "*following the submission of an agreed fee schedule for the next phase/ approved inspector stage of the project I agree that it would make sense to sit down at the earliest convenience to review where we are going forward*" {SEA00000174}.
205. During this time, Bruce Soules (Studio E) was involved in preparing a "*Full Plans Application*" submission form for Building Control {SEA00000179}. According to an email I was copied into, John Allan (Building Control) wanted a set of drawings to accompany the submission, but Bruce said "*it probably makes sense to hold on the drawings until we have confirmation on the flats and ground floor changes*" {SEA00011398}. In September 2014, Simon Lawrence (Rydon) emailed John Hoban (Building Control) and said that "*Studio E are our Architects, lead designers who will forward all relevant drawings, etc in the future*" {SEA00000189}. I do not recall if Simon Lawrence meant Rydon had been providing information to Building Control up to this point, but Studio E would be providing the information hereafter, or that should Building Control require any documents, not having received any to date, it should contact Studio E. I discuss above the fact that Studio E was not involved in all Building Control interactions, particularly as the Project progressed.
206. Towards the start of my involvement in the Project, I recall meeting John Hoban (Building Control) with Simon O'Connor (Rydon) on site {SEA00000189}. This may have been during the week commencing 25 August 2014 {SEA00011542}. I remember that John was very clear about how he wanted information issued,

such as that he was specifically and primarily concerned with fire related matters and wanted a basic set of information so that he could then request further information if he required it, so that he was not overwhelmed with information. He mentioned that he would not ask specifically about information for all items particularly where he considered that these might be dealt with on site/ as they arose and that fire related items would remain his priority. He often stressed that he was supposed to oversee several hundreds of projects. However, I had also experienced him to be very diligent, for example I noted that on the KALC project he had "*crawled into almost every conceivable cavity possible with a torch*" during the several weeks of fire stopping checks {SEA00011730}.

207. From fairly early in my involvement in the Project, I flagged to Rydon the importance of sitting down with Building Control to eliminate the risk that Building Control would disagree with design decisions that been made and require late changes to the design {SEA00011707}. In September 2014, I suggested reconsidering the fire strategy plans in light of revised drawings, albeit this was a process which was subject to a settled decision on the layout of the Lower Floors.
208. Below I have summarised the key conversations I had with Building Control, based on my email records. In addition, I am aware that there were other issues that various contractors and consultants discussed with Building Control that Studio E may not have been aware of. For example, particularly with the smoke vent strategy, I understand that these conversations ended up being directly between the specialists (JSW and PSB) and Paul Hanson (Building Control) (for example see item 3.01 of {SEA00013778_0002}). As this was very much a specialist field, my involvement generally extended to the physical finish and coordinating the modifications as a result of changes to duct routing (for example, see paragraph 141 regarding JSW's coordination of the Building Control process above). In addition, my understanding was that as the Project progressed, Building Control would visit site with Rydon without Studio E being involved or invited, for example I do not recall being aware beforehand of the Building Control's attendance at site in the week commencing 23 November 2015 {SEA00013681_0002}.

Dry riser and primary Building Control contact

209. In August 2014, David Bradbury (JSW) said he wanted to speak to Building Control directly regarding the dry riser {SEA00011493}, and Simon Lawrence (Rydon) said he did not have any issue with this provided the design team was kept up to date {SEA00011542}.

210. On 2 September 2014, David Bradbury (JSW) emailed John Hoban (Building Control) {SEA00000186}. He said that he wanted to discuss the modifications to the existing dry riser, because:

"We are not increasing the high [sic] of the existing riser but we are adding two additional floors at low level which were previously walkways. We understand the existing riser is above the current permitted height of 50 meters, we would therefore need to discuss the proposed modification and what measures we need to take to gain approval for the new system."

211. After David Bradbury sent this email, I forwarded him contact details for Paul Hanson (Building Control), who I said was helpful on fire related issues {SEA00011561}, and on 3 September 2014 David Bradbury forwarded the request to Paul Hanson {SEA00000187}.

212. On 3 September 2014, Paul Hanson (Building Control) responded to David Bradbury {SEA00011569}. He said that Building Control's position was *"Essentially the building regulations cannot require you to improve the system to serve the existing floors over 50m. The regulations only apply to the work being carried out and additionally you must not adversely affect the existing building"*.

213. This was a specialist item for which I was not qualified to comment on the technical particulars. Ultimately the agreed solution had to be achieved between the specialist provider and Building Control.

214. On 5 September 2014, John Hoban (Building Control) clarified that he was the Building Control surveyor charged with dealing with all Building Regulations matters for the Project and should be the first point of contact on all proposals

and/or issues on which technical advice was required. He said that Paul Hanson was the Building Control surveyor for fire regulations for the Project and he would provide John with technical advice and observations on the proposals submitted under Parts B1 and B5 in Schedule 1 of the Building Regulations {SEA00011597}.

Submission 1

215. On 22 September 2014, I emailed Simon Lawrence (Rydon) because I wanted to *"flag up the importance of getting John Hoban and Paul Hanson round a table to agree the fire approach to eliminate package risk re fire ratings/ AOV's etc"* {NCI/22 - 23}. By this, I meant there is an imperative to get to an agreed position on fire related items in order that their resolution does not drag and adversely affect the procurement program.
216. On 24 September 2014, I sent an email to John Hoban (Building Control) and copied in his colleague Paul Hanson and Simon Lawrence (Rydon). I forwarded a pack of 20 drawings which included the fire access, fire strategy and basic plans and elevations {SEA00000215} (I understand Building Control referred to this as **Submission 1**). This followed a discussion I had with Simon Lawrence after the design team meeting on 23 September {SEA00011824}. In my covering email, I said *"I know you like to go through the drawings on an agreed process of release rather than just being swamped with everything at once"*. Five days later, on 29 September 2014, I also forwarded issue 3 of the Exova fire strategy report and recent correspondence with Exova {SEA00000215}.
217. On 18 November 2014, Building Control provided comments on Submission 1. I forwarded these to Rydon and JSW {NCI/24 - 27}. In short, John Hoban (Building Control) said that a decision notice would follow shortly and said he had highlighted *"the most significant points"*. He commented on the Walkway stairwell ventilation, ventilated lobbies to non-residential accommodation, the fact that the ventilation rate of the existing residential scheme still needed to be justified by the design team and access to riser shafts directly to a single stairway needed to be avoided.
218. Regarding the ventilation scheme, John Hoban said:

"The building regulations deal with the building work proposed in an existing building and are limited to ensuring that no adverse affect takes place to any exiting [sic] situation. Your client does however have an overriding responsibility to provide adequate fire safety for the existing building under a separate piece of legislation called the Regulator Reform (fire safety) Order 2005 (RRO), which may involve upgrading the exiting building. At preliminary meetings the design team had highlighted a concern whether any refurbishment of the mechanical stairway lobby ventilation system would be suitable for the purpose of the RRO."

"For the purpose of submission S1 we will consult the fire authority under the building regulations in the normal way but is important to understand that this consultation only relates to the new building work taking pace and will give not reassurance to your client regarding how the existing building will be considered under the ongoing controls of the Regulatory reform (fire safety) order."

219. I also forwarded Building Control's comments on Submission 1 to Terry Ashton (Exova) on 20 November 2014 {SEA00012189}. In the covering email, I said *"I am due to meet with them on Monday on site and wondered if you had any views on their comments. On the Academy project we had the situation where Tony Pearson managed to argue some of their comments away. If you had any observations particularly where you think there comments may be excessive I would be grateful to know as I can take these with me to the meeting on Monday"*. By this I meant with any engineered fire strategy there is inevitably a difference in interpretation. Ultimately there needs to be a consensus in the final solution. Terry provided comments which I forwarded to Building Control and Rydon {SEA00012197}. I have handwritten notes of a meeting titled *"Site Meeting BC Grenfell"* dated 24 November 2014 {SEA00012187}.

Window openings

220. On 18 November 2014, I emailed Building Control regarding window openings {SEA00000223}.

Smoke ventilation system

221. On 16 February 2015, David Bradbury (JSW) said that he had spoken directly to Paul Hanson (Building Control) who had confirmed that he would be unable to attend the meeting the following Wednesday but that as the principles of the design remained the same as the technical submission that had already been submitted, he would review the scheme on that basis and there was no need to attend. David also confirmed that Paul had said that he did not envisage any issues as the comments he had initially made in our initial meeting with Building Control had been incorporated {SEA00012736}.

Fire doors

222. Studio E was not involved in any door replacement works for the Upper Floors.
223. On or around 23 February 2015, I noted that there were 9 doors on the New Floors which should be FD60 (i.e. fire resistant for 60 minutes) but were showing as FD30 (i.e. fire resistant for 30 minutes) on the door schedule {SEA00012781}. I informed Rydon who said that we had no choice but to go with what Building Control requires, and asked me to find out {SEA00012782}.
224. On 23 February 2015, I emailed Building Control regarding fire doors {SEA00000244}.

Smoke ventilation system technical submission

225. I have explained the extent of my involvement in the smoke ventilation system at section E4 above. According to my review of my emails, I do not believe I was party to JSW's technical submission of information to Building Control in/around 19 January 2015.
226. On 6 March 2015, Simon Lawrence (Rydon) emailed Paul Hanson and John Hoban (Building Control) regarding the smoke ventilation system {SEA00000247}. He said:

"Further to our telephone conversation please find attached the preliminary floor plans of the lower floors within Grenfell so you can see

that the strategy hasn't changed from our meeting. We haven't formally issued these to yourself because we are still in the process of finalising the new AOV duct route through the lower floors (flat side or lobby side). It is still outstanding as we have had some structural issues to take into consideration around building these shafts. Either way the AOV grill location on each lower floor will still feed the same lobby area."

227. I was not party to this conversation. At some point I recall Simon Lawrence (Rydon) suggesting the conversation between the specialist smoke ventilation system contractor and Building Control had become very complicated and technical and therefore he would let me know of the final ducting path and the architectural implications once this was resolved.
228. In the email, Simon Lawrence (Rydon) said he was hoping that Building Control could indicate whether it would approve the submission so that Rydon could start purchasing and installing the new system to the Upper Floors. He said (Rydon) would provide the final plans for sign off once the structural issues with the shafts in the Lower Floors had been resolved.

Cladding cavity barriers

229. Cladding cavity barriers was something that was a focus for us. Around March 2015, Bruce Soules (Studio E) had visited a construction industry exhibition called Ecobuild, and visited the stand of Fill Metalbau, a building facade specialist. Bruce emailed me and Rydon that he thought Building Control would be very particular about fire stopping at the Tower {SEA00012915}.
230. On 6 March 2015, I emailed Building Control regarding the fire rating to allow for within the cladding at the lines between apartments, stating "*where we are overcladding what fire rating do we need to allow for within the wall build up between apartments*" {SEA00000252}. I attached Harley Drawings C1059-202 rev C, C1059-200 rev I, C1059-201 rev D, C1059-301 rev E, C1059-100 rev A (the Harley Specification) and C1059-305 rev C. I note by the combination of Harley Drawings and C1059-100 rev A {SEA00003157}, Building Control

could have been aware of a number of the materials proposed for the over cladding system.

231. On 10 March 2015, Paul Hanson (Building Control) responded stating that "*if you mean fire resistance, the walls between apartments are compartment walls so the construction should achieve the same fire time as the elements of construction for the building – the fire time depends upon the height of the building*" {SEA00012927}. I did not agree with Building Control's response because I think Paul had misunderstood the question I was asking which was in relation to the fire rating within the external wall cavity on the compartment lines as opposed to party walls between apartments on the floor plate which were already defined on the fire strategy drawings. I asked a further question to clarify the nature of my query the next day {SEA00000260}.
232. On 18 March 2015, Ben Bailey (Harley) emailed me and Rydon, copying in Building Control, asking for clarity on what the vertical and horizontal requirement for firebreaks (which should have referred to cavity barriers) were as, in his view, he did not agree with Building Control's interpretation and the technical representative of the cavity barrier supplier (whom I believe was from Siderise) were not consistent {SEA00012953}. I understand the difference between Building Control and the supplier was the interpretation of the requirements under Approved Document B, Volume 2 – Building Other Than Dwellinghouses (ADB2) (item 15 of Table 1 Appendix A) for cavity barrier ratings.
233. On 20 March 2015, I spoke with Building Control in the morning and John Hoban (Building Control) emailed me afterwards saying {SEA00012963}:

"I would confirm that the fire time for the new Elements of Structure (new columns, beams, sections of compartment floor etc.) in Grenfell Tower is 120 minutes, as specified in section 1a of Table A2, Appendix A of Approved Document B. I would also draw your attention to diagram 33 of Approved Document B and highlight the detail between compartment floors and external cladding".

234. On 25 March 2015, Kevin Lamb (Harley) circulated updated drawings of the cladding with further details for the firebreaks "*all now upgraded to 120min*" {SEA00013001}.
235. I understand that Harley and its supply chain then raised the concern that the upgrade to the firebreaks would cost £12,000, and Harley's supplier (presumably Siderise) had said that, according to Building Regulations, a firebreak of only 30 minutes and 15 minutes insulation was required {SEA00013022}.
236. On 27 March 2015, I emailed Building Control again and copied in Exova regarding the requirement for cavity fire barriers to be fitted between the existing concrete external wall panels and the new external rain screen aluminium cassettes {SEA00000264}. I asked him if he agreed with Siderise's perspective that a 30 minutes fire integrity and 15 minute fire insulation cavity barrier was all that was required.
237. I later explained to Rydon that John Hoban (Building Control) was not happy, but would discuss the issue with Paul Hanson (Building Control), as I understand Paul to have specific competencies regarding fire safety {SEA00013022}. It was at this point that Harley emailed me and Rydon and said that what was being discussed was a cavity barrier (to stop fire spreading in a cavity) rather than a fire stop (used to stop fire spreading between floors or through openings in fire rated walls) and asked if I would make this point clear to Building Control {SEA00013029}.
238. On 30 March 2015, I emailed Building Control with the above information, and provided contact details so that Ben Bailey (Harley) could liaise directly with Building Control {SEA00013034}. John Hoban (Building Control) later repeated that "*I would advise you that it is my interpretation of diagram 33 of Approved Document B is that the detail between compartment floors and external cladding, is not a cavity barrier, therefore it must be fire stopped to at least the standard of the existing, compartment floor [120 minutes].*" {SEA00013036}. A Ricky Kay (Siderise) said he would prepare an official response to Building Control {SEA00013037}, but Rydon asked Siderise and Harley to consider the difference of opinion further privately {SEA00013039}.

239. Following this, on 31 March 2015, I wrote to Building Control and explained why it was thought that what had been described as a firebreak was in fact a cavity barrier, because *"The relationship between the back of slab and cladding remains the same as the original cladding (concrete) is retained and therefore the integrity of this relationship at floor level has not been affected. The new cladding constitutes an additional layer applied on top not a new floor slab interface and therefore the interpretation is that this constitutes a cavity barrier and not a fire stop."* {SEA00000265} The view I expressed in this email was based on the points made by others as set out in the preceding paragraphs, as part of my role of coordinating the Building Regulations approvals process. To assist Building Control I attached drawing 1279 SEA (06) 110 {SEA00002499} and a copy of diagram 33.
240. On 31 March 2015, I emailed Terry Ashton (Exova) and asked him if he would be able to clarify whether he could comment on the history of the item. He replied and said it was not something that would form part of the fire strategy for the Tower, but that he agreed with Siderise's position. He also said *"it is difficult to see how a fire-stop would stay in place in the event of a fire where external flaming occurred as this would cause the zinc cladding to fail"*. After, I thanked him for his input and said *"metal cladding always burns and falls off"* {SEA00013049}.
241. I recall that at the time I wrote this email this understanding was based on advice received during my involvement on a previous project from a fire engineer. In preparing this witness statement, I sought to recall more information about the relevant project and I believe it was the *"3 & 4 Hardman Square, Spinningfields, Manchester"* which Foster + Partners designed for Allied London, in and around 2004. I was the Project Lead for Foster + Partners, and I now recall that Arup Facades assisted in designing the cladding as a façade consultant with Metalbau Frueh as a subcontractor.
242. The reason that the facade was significant on the Manchester project was because it involved office blocks that were relatively close together and potentially triggering the boundary proximity condition in ADB2. I now recall that a consultant from Arup Facades, who may have been named *"Wieslaw*

Kaleta", used a similar description to mine above in order to describe the normal performance requirements of a facade in terms of its fire resistance, and the point that a facade is not normally considered a designated fire boundary. If I were to write this email again, I would have used the word "*melts*" instead of "*burns*".

243. John Hoban (Building Control) replied the next day and essentially said that the matter had become clearer and he agreed that the cavity barriers shown in the drawing I had sent him were the correct approach {SEA00013061}.
244. Subsequently, I liaised with John Hoban regarding the same issue in the context of the Lower Floors {SEA00000269} {SEA00013072}. On 1 April 2015, Simon Lawrence (Rydon) emailed Harley to state that Building Control "*is now in agreement with the fire protection in the cladding being a 'cavity barrier' rather [than] a fire stop as first thought*" {SEA00013076}.
245. In a meeting which I believe took place in April 2015 (possibly the client design sign off meeting on 30 April 2015), I recall being told by Simon Lawrence (Rydon) something along the lines of that there was "*no need to ask any more questions as the cladding has been signed off by Building Control*".

HIU PRV

246. On 20 March 2015, David Bradbury (JSW) emailed John Hoban (Building Control) regarding JSW's proposal for the HIU pressure release value connection to the existing waste. I understand this is not relevant to the Fire and have not commented on this further.

Ground floor store room

247. The smoke vent was very much a specialist item and was peculiar by virtue of the original design. This became a specialist item for the M&E subcontractor, JSW, and Building Control who had to escalate the proposals to conversations with the LFB. In this respect Studio E was very much a bystander / observer and had to be aware primarily only of the builders' work implications and to coordinate the information for the Building Regulations submissions.

248. Around mid-December 2015, there was a design team meeting which included discussions about the location of various smoke ventilation systems, particularly to the Lower Floors. There was also confirmation that both Max Fordham and Building Control had signed off the design for the revised smoke extraction / ventilation system {SEA00013778}.
249. On 16 December 2015, I emailed Steve Blake and David Hughes (Rydon), copying in David Bradbury (JSW), and confirmed I had been through the fire strategy issues and noted that the lobby to the boxing club was added at Revision 02 and omitted in Revision 03 when the additional escape stair lobby was added. I commented that the changes would have followed meetings with and mark ups made by Paul Hanson (Building Control). I confirmed I was available in the first week of January 2016 for a walk around with John Hoban (Building Control) if necessary to check there were no other issues {SEA00013768}.
250. Later that day, David Hughes (Rydon) subsequently emailed John Hoban (Building Control) to arrange a site visit with Rydon and myself in the New Year. We agreed 7 January 2016 for this visit {SEA00013780}.

Site visit on 7 January 2016

251. On 7 January 2016 David Hughes, Steve Blake (both Rydon), John Hoban, Paul Hanson (both Building Control) and I all met at site to discuss Building Control sign-off. The following day, David Hughes circulated the minutes of that meeting to the Project team {SEA00000340} {SEA00000341}. I was to send all 'as built' drawings required by Building Control to facilitate the sign off process, but note that Building Control would not be able to sign off the Tower until the works were complete. I took a number of photographs that day, including {SEA00000324} {SEA00000326} {SEA00000327} {SEA00000328} {SEA00000329} {SEA00000330} {SEA00000335}.

Submission 2

252. Following the meeting, on 11 January 2016, I emailed Paul Hanson and John Hoban (Building Control) and copied in others (including Rydon, JSW and Harley), attaching updating fire strategy drawings. I said that Harley was

finishing its production drawings for the cladding and would issue these after John Hoban's cladding inspection which I understood to be taking place on 12 January 2016, although I was not involved in this inspection {SEA00000342}.

253. On 12 January 2016, David Hughes (Rydon) emailed John Hoban (Building Control) to ask him to confirm whether his only comments on the minutes of the site visit was that there was no mention of "*fire stopping to penetrations through walls & floors*" {SEA00000345}.
254. On 26 January 2016, Paul Hanson (Building Control) emailed me stating that he had considered the plans (he referred to them as **Submission 2**) and that "*I think it is wise to consult the fire authority again now as the scheme is acceptable in principle with matters of detail left to resolve, and I will do so adding the previously submitted powered vent specification*" {SEA00013943}. I later forwarded this to Rydon and JSW {SEA00013956}.

F4 Fire Authority

255. I do not recall having direct communication with the LFB or any similar fire authority (the **Fire Authority**) during my involvement in the Project. I understand that the Fire Authority was consulted during the Project, as illustrated below:

255.1 On 24 September 2014, Simon O'Connor (Rydon) emailed me to ask if the LFB had been issued a copy of the Building Control Full Plans Application form {SEA00011801}. I replied the same day, stating that "*I am not aware if the LFB have been given a copy of the building control application for comment. I know that Paul Hanson is the RBKC Building Control fire officer and he prefers to escalate any fire issues that he is unsure about to the LFB via his contacts. I am sending out a pack on information today to John Hoban as agreed with Simon (Lawrence) after yesterday's meeting.*" {SEA00011824}.

255.2 On 1 April 2016, Paul Hanson (Building Control) emailed me a letter from the London Fire and Emergency Planning Authority, which stated "*The Brigade has been consulted*" and "*is satisfied with the proposals shown*" {SEA00014149}.

F5 Reliance on third parties summary

256. Reliance on the advice of others primarily arose with regard to those detailed designs that were produced by others during the Project, such as specialist subcontractors. As set out in the section above, in order to fulfil my role in coordinating the Building Regulations approvals process for designs prepared by others, I would identify any potential problems with those drawings that would manifest to an architect, say for example if a handrail was located at the wrong height in contravention of Building Regulations guidance, and then rely on the expertise of those with either a more detailed knowledge of the design in question (ie the actual designer) or those with more specific expertise to coordinate the approvals process (eg Exova for fire safety and fire engineering, Building Control for compliance with Building Regulations, etc).

257. Taking the Building Regulations approvals process for the cladding as an example, as explained in more detail above, as part of my coordinating role I relied on the expertise of Rydon, a main contractor experienced in refurbishing high-rise residential blocks, a specialist subcontractor, Harley, who I understand stated that over-cladding tower blocks was very much what it does, Exova, which markets itself as a world leader in the provision of fire safety services and Building Control, which has specific competencies in verifying that designs comply with Building Regulations, which, I understand from correspondence received during the Project, in turn relied on the LFB.

G DID STUDIO E CARRY OUT ANY INSPECTIONS OF THE TOWER DURING OR AROUND THE TIME THAT REFURBISHMENT WORKS WERE COMPLETED AND IF SO, THE OUTCOME OF THOSE INSPECTIONS

258. I did not carry out any inspections of the Tower, either during or around the time that the refurbishments were completed, or at all. My understanding is that Studio E was not responsible for carrying out any inspections of the Tower, either during or around the time that refurbishment works were completed or at all. Related to this, relative to the amount Studio E was involved in the earlier stages of the Project, Studio E was less involved in the Project by early 2016.

259. Throughout my involvement in the Project, from time to time I took photographs of various aspects of the works. I have provided some examples of these photographs above. These photographs were as a record for Studio E, for example to show people in the Studio E office to keep them aware of progress or to assist me in spatial coordination. If I had taken photographs as part of any kind of inspection (which I did not), then they would usually be annotated or listed in a spreadsheet with comments describing what the inspection had identified. This may be described as a snagging list. We were not asked to provide any snagging service on finished works.

260. My understanding is also that Studio E was not responsible for supervising any elements of the works. Despite not carrying out any inspections or supervising the works, I did visit site from time to time during the Project, for example, at {NCI/28} I have attached a list of appointments I attended during my involvement in the Project, some of which will be site visits. There are likely to have been other times I attended site.

261. If it assists the Inquiry, I was aware that the following may have carried out inspections during or around the time that refurbishment works were completed:

261.1 The clerks of works, as to the quality and progress of the works. For example, I note that in its December 2014 regeneration newsletter to residents, KCTMO/Rydon stated "*The Council's Building Control department is carrying out regular inspections to ensure the quality of*

work done. We've also appointed two clerks of works for this" {SEA00012382}. I was copied into very little correspondence regarding these inspections, so was not generally provided with copies of inspection reports, however Steve Blake (Rydon) forwarded {SEA00013680} me a copy of Jon White's (John Rowan and Partners) report number 26, dated 3 December 2015 {SEA00013681}. In the report, among other things, Jon White states: (i) there was a rumour that Jason North (the site manager), was not due back on site until after Christmas, although I understand this was not correct {SEA00013684}; (ii) the cladding was a source of delay and that the snagging of the cladding had started; (iii) "RBK building control was last on site last week, looking at the cladding. Apart from the damaged panels, and bits of making good, he was generally happy"; and (iv) the fire escape routes were not in compliance with the fire strategy.

261.2 Max Fordham, as to elements of the M&E works {SEA00012916} {SEA00013551}.

261.3 Building Control, as to compliance with the Building Regulations. My understanding was that this included a review of the cladding {SEA00013681} {SEA00000342}.

261.4 Carl Stokes (C S Stokes and Associates Limited) as to compliance with Fire Risk Assessment (FRA) type obligations. For example, following an FRA report dated 26 April 2016, I was asked to address a limited number of specific queries in order that Rydon had the information it needed to address points raised by Carl Stokes {SEA00014177} {SEA00014180} {SEA00014184}.

Statement of truth

I believe that the facts stated in this witness statement are true. I am willing for this witness statement to form part of the evidence before the Inquiry and to be published on the Inquiry's website.

Signature



Name

Neil Stuart Crawford

Date

09/11/18

Neil Stuart Crawford