

IN THE MATTER OF THE GRENFELL TOWER INQUIRY

PHASE 2

MODULE 3

OPENING SUBMISSION BY J S WRIGHT & CO. LIMITED

(LIMITED TO ISSUES RELATING TO SMOKE CONTROL)

1. As the Inquiry is aware, J S Wright & Co. Limited (“JSW”) was appointed by Rydon Maintenance Limited (“Rydon”) to be the mechanical and electrical subcontractor on the Grenfell Tower refurbishment project (“the Project”).
2. Although this opening submission is limited to matters relating to smoke control, further information about the role played by JSW in the refurbishment project can be found in JSW’s previous submissions to the Inquiry:
 - 1) Position statement dated 31st August 2018 {JSW00001883},
 - 2) Phase 1 closing submissions dated 6th December 2018;
 - 3) Brief opening statement for Phase 2, Module 1 dated 20th December 2019 {JSW00007138}; and
 - 4) Opening statement for Phase 2, Module 3 dated 18th March 2021 {JSW00007202}.

Terminology

3. The system designed for and installed at Grenfell Tower has been described in different ways including smoke control system, smoke extract system, smoke ventilation system and automatic opening vent (AOV).
4. For the purposes of this opening submission, JSW will refer to smoke control system (SCS) to mean the automatic mechanical system that upgraded and enhanced the existing natural system on floors 4-23 and which was extended to serve the new lower-level residential floors. Using smoke control system in this

context accords with the terminology used by Mr Hugh Mahoney, the expert from PSB who designed the SCS.

5. The term automatic opening vent (AOV) will be limited to those areas of Grenfell Tower that had their own system for controlling or extracting smoke by way of a window that opened directly to the outside such as the boxing club and community room. They were not linked to the smoke shafts or the fans of the SCS.

The existing smoke control system installed at Grenfell Tower

6. JSW had no involvement with, or responsibility for, the SCS prior to the Project. Much has been said about the condition and operational status of the existing SCS and no doubt the Inquiry will assess this as part of its investigations.
7. The Inquiry has heard from various witnesses who describe the condition and operational status of the existing smoke control system. JSW has provided some information to the Inquiry about the non-operational state of the existing SCS in the witness statement of Alan Whyte.
8. JSW accepts that the design of the smoke control system ("SCS") within the Project fell within its M&E package of works.
9. The initial design intent can be seen in the Employer's Requirements ("ERs") prepared by Max Fordham {JSW00000367} which were provided to JSW as part of the M&E tender package. Within section "U 10 General Ventilation", the ERs state:

Under the heading "Proposed System" - "The current system was designed and installed around 40 years ago and there are no compatible current standards, Building Control have been approached to agree how best to progress with the design of the system given the physical constraints of the building. Their response, along with that of the Fire Brigade, is expected during the tender period".

Under the heading "Smoke Control" - "It is not viable to adapt the existing system to comply with current standards. Given the physical constraints of the existing building, the design approach has therefore been to retain the existing system and replace all of the existing components with new, equivalent or better components."

11. Although the design of the SCS changed from that contained in the ERs, the same point of principle applies; it was not feasible to bring the SCS up to modern standards.
12. This was well-known to all the relevant professionals who were involved in the decision to refurbish Grenfell Tower, including the TMO, (JSW was not involved in this decision).
13. Max Fordham prepared a Schedule of Mechanical Equipment which provided equipment specification {JSW00002329}.

JSW engages PSB

14. Although the proposals for the SCS was included in the M&E tender, JSW did not have the in-house expertise or experience to undertake this work.
15. JSW had to sub-contract this work to a suitable and competent contractor. Sub-contracting elements of work was, and remains, the norm in the construction industry.
16. The design of smoke control systems is a very technical matter and requires input from specialists who are suitably experienced and who have appropriate expertise.
17. The Inquiry will of course form its own view, but JSW would submit that PSB fell within the category of persons who are suitably expert, experienced and competent to have designed and been involved in the development of the SCS at Grenfell Tower.
18. As such, it was reasonable and appropriate for JSW to have engaged PSB to design the SCS and for JSW to have relied on PSB's experience and expertise.
19. In fact, PSB itself acknowledged that it was the expert and that JSW was reliant on PSB on matters relating to smoke control. Within a chain of internal PSB e-mails {PSB00000003}, Mr Hugh Mahoney states:

“The design is ours that's why we have an order for the design only. All product data is on file in the tech submittal and the supporting product quotes. please note that the customer is totaly [sic] dependent

upon us and we must provide all the necessary details both for design and the selected products.” (PSB internal email dated 26th May 2015 from Hugh Mahoney {PSB00000003_0003})

“All projects are subject to our design and therefore our equipment selection. We are the smole [sic] control experts and that is why we are given the order, the customer will never be in a position to advise us in detail that will always be our responsibility.” (PSB internal e-mail dated 27th May 2015 from Hugh Mahoney {PSB00000003_0002})

21. As those e-mails are headed, “Grenfell tower – Smoke Ventilation System”, it is reasonable to assume that “the customer” is a reference to JSW.
22. PSB had been involved in the Grenfell Tower project since about 2012 and in late 2014, they were introduced to JSW.
23. Despite PSB’s experience and suitability for the SCS works, it could not be formally engaged until it had been put on JSW’s list of approved sub-contractors. Once this had happened and JSW’s terms and conditions had been provided to and accepted by PSB, the process of formal engagement took place.
24. JSW subsequently issued a works order (i.e. a purchase order) to PSB followed by series of variations. PSB was formally contracted to design the SCS at Grenfell Tower by means of the JSW works order dated 20th May 2015; “Design only for AOV system” {JSW00003835}.

The development of the design of the SCS

25. JSW had engaged PSB to design a compliant SCS. JSW was aware that the design would need to be approved by Building Control.
26. JSW needed to be aware of developments in the SCS design process. In that context, JSW attended various meetings with PSB, Building Control, Max Fordham and others to discuss the options for the design of the SCS. JSW acted as a conduit for the sharing of information between PSB, Building Control, Max Fordham and others.

27. The Inquiry has received evidence about the compliance criteria for the SCS and it will no doubt receive further evidence as Module 3 progresses.
28. In October 2014, Paul Hanson of RBKC Building Control informed JSW that the new SCS must be “no worse” than the existing system and JSW passed this information to Max Fordham.
29. Mr Mahoney of PSB has explained his concerns about the suitability of Max Fordham’s design intent as provided for in the ERs.
30. As Mr Mahoney foresaw some issues with that design, he applied his expertise and experience to develop a different design which he refers to in his witness statements.
31. Ultimately it will be a matter for the Inquiry to determine what type of system was designed and, importantly, whether the SCS fulfilled the functional requirements of the Building Regulations.
32. Ms Menzies observes:
 - 1) that Dr Lane concludes that the design did not fully meet the performance design criteria in BS 12101-6 (paragraph 119 of Ms Menzies’ report {BMER00000007_0019});
 - 2) that she does not believe that the intent of the design proposal was full compliance with BS12101-6. She says her view is supported by Mr Mahoney’s explanation of the design process contained in his second witness statement (paragraph 120 of Ms Menzies’ report - {BMER00000007_0019});
 - 3) that she considers the performance based design for the lobby smoke control system (PSB Technical Submission Rev 3) as conditionally accepted by the BCB was acceptable in principle (paragraph 25 of {BMER00000007_0007}); and
 - 4) the adoption of a velocity of at least 2 m/s at the open lobby/stairwell door for smoke control was appropriate for the means of escape and firefighting phases (paragraph 26 of {BMER00000007_0007})

33. Mr Mahoney's revised design had regard to certain set assumptions which "informed my approach to the design of the System"; paragraph 31 of Mr Mahoney's second witness statement {PSB00001373_0006}.
34. These "assumptions" will no doubt be examined more closely within Module 3 but they include a fire starting in a single flat, the SCS only being required to and expected to operate on one floor at any time and a system focussed on protecting the means of escape via the stair.
35. Other relevant matters included the building maintaining compartmentation and fire doors having working self-closing devices. Only residents of the fire flat or residents affected by fire or smoke from that flat would be required to leave the building.
36. No SCS, including the one installed at Grenfell Tower, would be designed to operate on multiple floors simultaneously or to be expected to respond to the rapid and uncontrolled development of a fire in multiple locations on multiple floors as occurred on 14th June 2017.
37. PSB prepared a series of Technical Submissions which set out its design intent and which specified the requirements for various components of the SCS. JSW submitted them to Building Control and received and shared comments.
38. The technical detail contained in the Technical Submissions was outside JSW's experience and expertise and so it was unable to comment on this. Prior to receiving approval and afterwards, these Technical Submissions were shared with Max Fordham who commented on them and they were of course assessed in detail by Building Control.
39. JSW was therefore aware that the PSB designs were being carefully scrutinised by organisations with appropriate levels of knowledge of smoke control systems.
40. PSB's design changed the existing natural design, with the inherent uncertainties around its operation in the event of a fire, to a fully mechanical system that operated automatically on the detection of smoke by a smoke detector on a particular floor.

41. This appeared to be an improvement in fire safety for Grenfell Tower and its residents.

The process of approving PSB's design

42. PSB prepared a Technical Submission Revision 1 dated 1st December 2014 {JSW00007011}. JSW submitted this to Max Fordham on 5th January 2015 asking for their comments. Mr Matt Smith of Max Fordham replied on 12th January 2015 to say that he had looked through the technical submission.
43. Mr Smith did not make any adverse comments on the content but said that it would be beneficial to have a schematic (or two) showing the operation of the system under general ventilation and fire conditions {JSW00006177}.
44. As he describes at paragraph 51 of his witness statement, {MAX00017304_0018}, Mr Smith did not always require a schematic but he wanted one to; "... ensure that I fully understood the proposal, and that JSW/PSB had taken proper consideration of the complexities of the Tower. This schematic was provided to me with the next round of JSW drawings on 30 January 2015."
45. JSW was not informed by Mr Smith that he had any concerns in that regard about PSB's design proposal.
46. JSW submitted the PSB Technical Submission Revision 1 to Building Control (Paul Hanson and John Hoban) on 19th January 2015 who classed it as Submission S1a for the purposes of the building regulations approval process.
47. The Technical Submission was revised and Revision 2 dated 14th April 2015 {JSW00002253} was sent by JSW to Building Control.
48. On 11th June 2015, Paul Hanson of Building Control contacted JSW raising a query in relation to part of section 1.1.2 of Revision 2. In essence Mr Hanson queried whether the Technical Submission intended to include the words; "I [sic] should be noted that as the system is designed to extract from the lobby, via the open stairwell door, the system is not designed to comply with all the requirements of [BS 12101 Part 6: Specification for pressure differential systems]."

49. This shows that Mr Hanson had carefully reviewed PSB's technical submission. Those words were subsequently removed {JSW00003221} and Revision 3 dated 12th June 2015 {JSW00002350} was submitted to Mr Hanson.
50. In a memorandum dated 24th June 2015 entitled B1 – MEANS OF ESCAPE OBSERVATIONS, {JSW00007168} Mr Hanson wrote to Mr Hoban (also in Building Control) in connection with PSB's Technical Submission Revision 3 and said: "I make the following comments using Approved Document B and, where appropriate, BS 9991.

Comments to client

Powered ventilation system serving the single stairway lobbies

The proposals outlined in the Smoke Ventilation Technical submission PSBUK1143-12 rev 3 are satisfactory.

1. I note that there is the intention to bring the ventilation system down to also serves [sic] the existing ground level lobby adjacent to the lifts and switch room.
 2. Final details of the key switch arrangement should be submitted when finalised.
 3. Generally the components of the system should conform to the Guidance on Smoke Control to Common Escape Routes in Apartment Buildings (Flats and Maisonettes) Revision 1: June 2012 listed in section 11.3."
51. By e-mail dated 24th June 2015, Paul Hanson wrote to JSW (copying in Hugh Mahoney, John Hoban and Neil Crawford of Studio E) attaching his comments on the smoke control system for the stairway lobbies and said that the proposals were satisfactory {JSW00000008}.
52. In all the circumstances and having regard to PSB's expert knowledge of smoke control systems and Paul Hanson's experience of smoke control systems and his familiarity with the layout of Grenfell Tower, JSW took this as being Building Control's formal approval of the PSB design for the SCS for Grenfell Tower.

Building Control was saying that the SCS was compliant with the Building Regulations.

53. In his witness statement, Mr Hanson states at paragraph 52 that the new smoke control system was designed in accordance with the principles of the Smoke Control Association (SCA) Guidance on Smoke Control to Common Escape Routes in Apartment Buildings (Flats and Maisonettes) Revision 1: June 2012. {RBK00033894_0009}.
54. Once Building Control approval have been obtained, Rydon issued formal instructions to JSW to proceed with work to the SCS {JSW00002562}.
55. Thereafter, PSB issued revised drawings to JSW who forwarded them to Matt Smith of Max Fordham for comment. Mr Smith's comments were sent to JSW who passed them to Hugh Mahoney for comment and reply.
56. This liaison between PSB and Max Fordham provides an example of how JSW facilitated the works to the SCS by providing a link between the various professionals.

JSW's work to the smoke control system

57. Although JSW had not been involved in the technical design of the SCS, it had a basic understanding of the sequence of operation once smoke had been detected. Mr Whyte provides evidence about this at paragraph 74 of his first witness statement.
58. JSW also needed to arrange for works to be undertaken in order to upgrade the existing system in accordance with PSB's approved design. The work and the components used were specified, and checked, by others.
59. The basic works undertaken as part of the upgrade of the SCS are set out in paragraph 71 of Mr Whyte's first witness statement.

Testing, commissioning and demonstration of the system by PSB

60. JSW contracted PSB to; "Test, commission and set to work the complete smoke ventilation system with required labour to complete within a two week period.

Provision for a separate day for client demonstration [sic. Supply all commission documentation including certificate of compliance for the complete system”

61. It was reasonable for JSW to appoint PSB to undertake this work as they are specialists in smoke control systems and would be commissioning their system to check compliance of the installed system against all the applicable performance criteria set out in the approved design.
62. The PSB commissioning process took place in the first part of 2016. The details of this are set out in the witness statements of Granville Partlow {PSB00001309 and PSB00001372}.
63. Following Mr Partlow’s series of tests on the SCS, the final day of commissioning included an on-site practical demonstration of the system and its controls.
64. In addition to Mr Partlow, Alan Whyte (JSW), Matt Smith (Max Fordham), Dave Hughes (Rydon) were present on 28th April 2016.
65. Also in attendance on that day was SM Andrew Walton who had been asked to attend the demonstration {LFB00023365 and MET00010828} along with members of North Kensington Fire Station’s White Watch who were undertaking a section 7 (2) (d) visit to the Tower at the same time.
66. The Panel will have regard to all the written and oral evidence that has been and will be presented in relation to the commissioning process that took place over 19 days between 3rd February 2016 and 28th April 2016 (Granville Partlow, first witness statement, paragraph 13 {PSB00001309}_0003}) as well as to all the documentation supplied by PSB.
67. From JSW’s perspective, the installed system had been fully tested by an experienced and competent person, Mr Partlow, and he had provided full documentary proof that the system had been tested. PSB’s commissioning outcome as stated in its commissioning report dated 28th April 2016 was; “All systems are operating according to design” {JSW00006204_0005}.
68. The PSB commissioning report was counter-signed by Alan Whyte to confirm that the process had been completed and hence applications for payment could be made.

Mr Whyte did not confirm that the system was operating correctly and had met the performance criteria, nor was he suitably qualified to have done so.

69. In this brief opening submission, JSW would highlight some of the evidence that has been presented to indicate to the Panel what was known or understood at the time.
70. Mr Partlow provides very detailed information about what he did and the procedures he followed when commissioning the system {PSB00001309}. This included checking the operation of the system in environmental mode and also activating the system in smoke control mode when operating in environmental mode.
71. Mr Partlow confirms that the system met the performance criteria set out in the approved design; “I was satisfied that on each and every floor the primary performance criteria were achieved: a minimum air velocity through an open lobby door of 2.0 m/s, and a door opening force not exceeding 100N”. Granville Partlow, first statement paragraph 110 {PSB00001309_0019}.
72. The Panel will have to consider whether it was necessary to re-commission the whole system after the installation of the fixed louvre on the ground floor in June 2016. JSW was not advised that re-commissioning was required and it was not suggested that this should take place.
73. As part of the commissioning process and in relation to the demonstration on 28th April 2016, Mr Partlow observes: “I was happy with the demonstration. The System worked well at every stage. I had no concerns about the System. No concerns were expressed to me by anybody present at the demonstration. At the time and from what was said to me at the demonstration, I remember that everyone present was impressed with the System and welcomed the demonstration.” Granville Partlow, first statement, paragraph 138 {PSB00001309_0023}.
74. With regard to the demonstration on 28th April 2016, Mr Smith (Max Fordham) states (paragraph 61 of his witness statement – {MAX00017304_0021}); “The SVS worked well without any problems. Smoke canisters were used to trigger the smoke detectors at several floors (sequentially, after resetting the system each time

rather than simultaneously) to demonstrate correct system operation. We walked to these floors to witness the dampers operating.”

75. Station Manager Andrew Walton has provided written evidence to the Inquiry in which he refers to attending the demonstration on 28th April 2016. In his statements, SM Walton notes: “... I do recall an extraction vent being open on the landing we were on during the demonstration and that you could physically feel air being drawn passed you and in the direction of the vent and into the ducting.” Paragraph 20 of {LFB00023365_0005} “... I remember that the speed of the fans was increased on the instruction of the person leading the demonstration in answer to one of the questions that was posed regarding could the system cope with a lot of products of combustion entering the lobby from a developed fire in a flat. The reason we knew that the fans had increased was because the movement of air increased together with the associated noises. I believe a stairwell door was opened during the demonstration, causing the system speed to increase”. Paragraph 21 of {LFB00023365_0005}.
76. During the demonstration, SM Walton was concerned that the strength of the extraction system lowering the pressure could possibly suck the flat doors onto their frames preventing them from being operated by a frail flat occupant. He says that he went to an unoccupied flat and the fan and vent were set running. He opened the flat door from inside to confirm that the door was not held closed by the negative pressure created. SM Walton states; “It did not seem any harder than overcoming a strong self closing device so I had no concerns regarding this. (Paragraph 22 of witness statement {LFB00023365_0006}).
77. Of the demonstration, Alan Whyte of JSW says: “On 28th April 2016, the system operated as intended and I recall that everyone present was content with the demonstration.”
78. Following the demonstration, PSB provided a copy of their full-building commissioning report dated 28th April 2016 and related documents (cause and effect etc.) as well as a copy of its O&M Manual dated 3rd May 2016. All relevant documentation was sent by JSW to Rydon/All Group Holdings on 25th May 2016 for inclusion in the mechanical O&M Manual {JSW00000022}.

79. PSB also provided a completion certificate for the smoke control system dated 5th May 2016 which stated that the, “Above Ground Smoke Ventilation System supplied by PSB for integration into [Grenfell Tower] Has been Mechanically and Electrically tested in accordance with the schedules laid out in the contract and is fully operational, in line with the agreed specification(s)” {JSW00000022_0055}.

Demonstration of the smoke control system to Building Control – 5th May 2016

80. Although commissioning information had been provided to Building Control, Mr Hanson’s experience led him to be concerned about potential problems with “inlet air” functioning properly. He suggested that Building Control should attend a working demonstration of the system. (paragraph 61 of Paul Hanson’s first witness statement {RBK00033894}_0011}).
81. The system was demonstrated to Mr Hanson by Mr Whyte (as the specialists, PSB, were unable to attend) on 5th May 2016 and he did not express any concerns in that regard.
82. Prior to the demonstration, on 4th May 2016, Mr Hanson wrote to Dave Hughes (Rydon) and copied to Alan Whyte (JSW) referencing the need for figures to be in m3/s and that the, “testing of the powered vent system we are witnessing tomorrow should be in accordance with section 9 and item of the attached SCA Guide” {RYD00076725_0002}.
83. Mr Hanson made clear what he was expecting to see or be shown at the demonstration in order to be satisfied that the SCS operated in accordance with the approved design.
84. Later that same day, Alan Whyte sent copies of various documents to Mr Hanson; the latest issued cause and effect, schematic and des-ops. Mr Whyte also said that at short notice “our specialist” are unable to attend, and as such he would be attempting to satisfy requirements. Mr Whyte set out a list of testing requirements from the Smoke Control Association Guide with items to be demonstrated tomorrow in red.

85. Mr Hanson records at paragraph 64 of his witness statement that; “apart from the missing inlet air at Ground level, the demonstration showed the system operated in the correct sequence” as set out in the table in his statement {RBK00033894_0012}. The issue with the inlet air was resolved soon afterwards.
86. Mr Whyte provides some information about this demonstration in his first witness statement: We and Mr Hanson were in a lift lobby. When the system kicked into smoke mode, the vents opened as intended, we could feel the movement of air, flat doors slammed and letterboxes in the flat doors opened and shut; Paul Hanson tested the door from the lobby to the stairwell and he was able to open it without too much difficulty.
88. Mr Whyte records that Paul Hanson was satisfied with the results of the demonstration (paragraph 132 of Mr Whyte’s first statement).
89. The following information led JSW to conclude that the SCS had been designed in accordance with legal requirements, had been installed correctly and was working according to the approved design criteria: The PSB design had received Building Control approval. The commissioning and demonstration on 28th April 2016 had been successful. The PSB Completion Certificate was issued. Mr Hanson was satisfied by the demonstration of the system.

After the successful demonstration on 5th May 2016

90. On 1st June 2016, John Hoban (Building Control) undertook an inspection of Grenfell Tower accompanied by Dave Hughes (Rydon).
91. On 2nd June 2016 Mr Hoban wrote to Mr Hughes with a list of seven outstanding items that required attention {PSB00001156}. These matters were attended to and on 7th July 2016, Mr Hoban undertook a further inspection and noted; “works controllable under the building regulations now complete. Clear job.” {RBK00013223}
92. The final Building Completion Certificate was issued by RBKC and Artelia issued a Certificate of Practical Completion on 18th July 2016 {ART00006689} which recorded that Practical Completion was 4th July 2016 and the defects liability

period was to expire on 4th July 2017. This gave JSW further comfort that everything was in order with the SCS.

JSW's involvement in the smoke control system after Practical Completion

94. JSW did not offer a planned preventative maintenance (PPM) service. This had been made clear to Rydon during the contractual negotiations leading to JSW being appointed as the M&E sub-contractor.
95. This is different to reactive repairs that JSW was obliged to resolve during the defect period, and did so.
96. In its Practical Completion letters, JSW had advised Rydon that

“... the responsibility for the correct operation of each system and all equipment maintenance regimes, fully in accordance with the manufacturer's requirements, for all the mechanical equipment installed under this contract rests with the development owners. Note it is a mandatory requirement of the contract that correct maintenance and system operation is carried out. We would remind you that you should now arrange the maintenance programme throughout the defect period for this contract as per the recommendations in the operating and maintenance manuals in order to prevent any chargeable call outs. Please note that the operating and maintenance manuals provided by ourselves are not fully comprehensive and are only recommendations. Advice should be sought from the prospective maintenance supplier on exact requirements based on the experience of similar schemes”
97. In JSW's third and final Practical Completion letter it advised Rydon that the 12 months' defects liability for all remaining elements (which included the SCS/AOV) ended at midnight on 17th July 2017 {JSW00001958_0002}.
98. Attached to its e-mail to Rydon/All Group Holdings dated 25th May 2016, JSW had sent a copy of PSB/Witt's maintenance quotation dated 5th May 2016 to Rydon and to All Group Holdings. JSW is not sure what action, if any, was taken by Rydon or the TMO to follow up on that quotation.

99. On 2nd November 2016, Alan Whyte (JSW) and Dave Hughes (Rydon) went to Grenfell Tower and met Claire Williams (TMO). They walked the site with Kamal (Engie) and Anthony Cheney (TMO). Mr Whyte recalls advising Ms Williams of the importance of setting up a maintenance log and to use people who understood the plant and equipment. Mr Whyte said to Ms Williams that the maintenance log would either show that everything was working correctly or if there was a problem that it had been identified and rectified.
100. In paragraph 48 of his second witness statement, Mr Partlow notes that he provided a demonstration to staff from KCTMO who would be responsible for testing the System {PSB00001372_0008}. This might have been in May 2016 (paragraph 150 of Mr Partlow's first statement) {PSB00001309_0025}.
101. The Inquiry is aware that the TMO had already engaged Allied Protection to undertake testing and maintenance of various pieces of fire safety equipment including the dry riser and the SCS at Grenfell Tower.
102. Allied Protection carried out testing and servicing of the post-refurbishment SCS at Grenfell Tower on 17th January 2017 and on 15th May 2017. In fact, Allied Protection had been engaged by the TMO to service the SCS in 2015 but they had not been able to undertake any servicing of the SCS until 2017 due to the refurbishment works. Allied Protection was also called to Grenfell Tower on the night of the fire to reset the fire panel {LAK00000263}.
103. The Panel will form a view about the maintenance and testing of the SCS post practical completion and who was responsible for arranging this.
104. From JSW's perspective, no complaints were received about the operation of the system in smoke mode or in environmental mode until 1st June 2017.

The report of a defect of the system in environmental mode

105. During a walk round the Tower on 30th May 2017 with Claire Williams, Dave Hughes observed that the system in environmental mode was not operating. He reported this as a defect to JSW on 1st June 2017. The actions taken by JSW are set

out in the second witness statement prepared by Alan Whyte and submitted to the Inquiry.

106. It does not appear that Mr Hughes, or anyone else on site on 30th May 2017, checked the temperature and therefore the temperature might have been outside the pre-programmed settings which would activate the environmental mode.
107. The Panel will investigate the alleged defect, what was done in response and, if it is proved that there was a defect, whether that had any adverse impact on the events of 14th June 2017.
108. It will be recalled that as part of the commissioning and demonstration process, the system was shown to change from operating in environmental mode to smoke mode when smoke was detected.
109. When the fire started and smoke was first detected on level 4, this was outside of the hours during which the environmental system had been programmed to operate. Therefore, the system would not have had to change from operating in environmental mode to operating in smoke mode.

The SCS on the night of the fire

110. The Panel might find it difficult to ascertain, with certainty, what did happen and when, and what could and/or should have happened during the course of the fire.
111. The Panel will receive a significant amount of information about events leading up to the night of the fire as well as on the night itself. This includes factual evidence as well as several hypotheses and scenarios of what might have happened and when.
112. For example, the Panel will assess the evidence about whether the SCS was tested on the Friday before the fire by Paul Steadman and was shown to have been working correctly.
113. The Panel will assess the testing and maintenance regime put into place by the TMO and the role of Allied Protection and the TMO's own staff and contractors. However, it might be reasonable to conclude that, having regard to the

circumstances of the fire, even a properly tested and perfectly maintained system would have been placed under intense pressure of a kind that it was not reasonably to be expected to deal with.

114. Any assessment of the operation of the SCS on 14th June 2017 will have regard to the general design principles applicable to such systems as explained by several witnesses; single location fire, operation on a single floor, protection of the stair, compartmentation remaining intact and only the residents of the affected flat would ordinarily be required to leave their flat and the building.
115. No information remains about the operation of the SCS as the data has been overridden and so other evidence must be reviewed to try and establish what happened and when, to the extent that this is possible.
116. The report from RINA Tech UK Limited {MET00072161} provides some useful information. It includes in its conclusion {MET00072161_0027}: Analysis of the logic program showed that it would have been capable of managing the smoke extraction system during the 2017 fire; Physical simulation of the reconstructed system showed that it was likely to have operated according to the programmed control logic; The system was configured correctly with respect to the control and operation of the smoke dampers in floors 4 and 11; It is reasonable to conclude that the dampers would have operated as designed at the start of the fire, by operating on floor 4 where the fire began; Due to the heat of the fire, on the balance of probability some of the firefighter's override switches short circuited causing the smoke dampers to behave unpredictably; It was not possible to determine when the unintended operation of the smoke extraction system might have occurred.
117. RINA refers to there being no reference in the logic program to the operation of the lifts. No such operation was intended for this system and it was not installed.
118. With regard to point 4) above, Dr Lane opines that "there is evidence that the system switched on at Level 4 when smoke was detected outside Flat 16" (paragraph 12.31.1 of {BLARP20000037_0077}) and, "It is also entirely possible that the Level 4 dampers did open in the early stages of the fire but then subsequently closed" (paragraph 12.31.2 e) {BLARP20000037_0078}.

119. It would seem that, on balance, the SCS was triggered by the presence of smoke in the lobby of Level 4.

120. The second 999 call received by the LFB was from Tunstall and this was timed at 00:57:44 {LFB00032988_0008}. This is further evidence that the system activated as designed upon detection of smoke.

The expert evidence on smoke control

125. The Inquiry has disclosed a report dated 20th April 2021 Version 05 prepared by Beryl Menzies {BMER00000007} “regarding the smoke control installation that formed part of the Building Regulations application associated with the refurbishment of Grenfell Tower”.

126. The Inquiry has also very recently disclosed, in four tranches, a smoke control report prepared by Dr Barbara Lane. This report is lengthy, detailed and complex, and JSW has not had a proper opportunity to fully consider the report and all the issues that arise from it.

127. JSW is therefore not in a position to provide any detailed comment on Dr Lane’s report in this document. However, JSW will engage with the Inquiry by submitting questions to Dr Lane, and to Ms Menzies, and providing further commentary in its closing submissions for Module 3.

Conclusion

144. In summary, JSW’s position in respect of the SCS at Grenfell Tower is:

- 1) PSB was experienced, suitable and competent to undertake the work to the SCS and PSB was very familiar with the layout of the Tower;
- 2) JSW engaged PSB to design a compliant SCS that was suitable for the particular physical layout of the Tower;
- 3) The PSB design (Technical Submission Rev 3) was approved by Building Control on 24th June 2015 as being compliant with the Building Regulations;

- 4) The installed system was thoroughly tested and commissioned by PSB in early 2016 and was certified as operating according to design;
 - 5) The system was demonstrated by PSB to JSW, Max Fordham and the LFB on 28th April 2016 and worked as intended;
 - 6) The system was demonstrated to Building Control by JSW on 5th May 2016 and the system operated correctly;
 - 7) JSW was not advised of any issues with the system in smoke mode or in environmental mode until the communication from Dave Hughes of Rydon on 1st June 2017;
 - 8) Mr Hughes reported a defect with the environmental mode but it is unclear whether there was a defect or the temperature settings required to activate environmental mode had not been reached;
 - 9) On 14th June 2017, the fire started at a time that was outside the programmed time for the operation of environmental mode;
 - 10) As the fire developed and more intervention and activity occurred, no SCS, however well designed and maintained would have been able to control the passage of smoke inside the Tower (clear and obvious routes for fire spread included open doors and the lift shaft).
145. JSW remains available to provide whatever assistance it can to the Panel as Module 3 develops.

Browne Jacobson

RLR for JSW

25 June 2021