

Grenfell Tower Inquiry

GRENFELL TOWER INQUIRY: PHASE 1 REPORT

**REPORT of the PUBLIC INQUIRY into the
FIRE at GRENFELL TOWER
on 14 JUNE 2017**

**Chairman: The Rt Hon Sir Martin Moore-Bick
October 2019**

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Presented to Parliament pursuant to section 26 of the Inquiries Act 2005
Ordered by the House of Commons to be printed 30 October 2019

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ISBN 978-1-5286-1602-7

(Volume 4 of 4)

4 volumes not available separately

CCS0719597372 10/19

Printed on paper containing 75% recycled fibre content minimum

Printed in the UK by the APS Group on behalf of the Controller of Her Majesty's Stationery Office

Part III

Conclusions

Chapter 21

The Cause and Origin of the Fire

- 21.1 The two principal matters to be determined are how the fire started and what caused it. In answering these questions I was assisted by expert evidence from Professor Niamh Nic Daéid (in relation to the origin, cause and initial internal spread of the fire) and Dr Duncan Glover (in relation to the electrical installations and certain appliances in Flat 16). Neither expert was involved in the investigations conducted by, or under the authority of, the MPS in the immediate aftermath of the fire. Therefore, although both experts were able to visit the tower to inspect and photograph Flat 16 and to carry out such tests as they considered necessary and appropriate, they were obliged to rely to a significant extent on the evidence gathered by others. The manner and means by which evidence was recovered from Flat 16 was, in certain respects, not ideal, but both experts considered that the available evidence was sufficient to allow them to reach their conclusions with confidence.

1 Where did the fire start?

- 21.2 It is quite clear, and indeed no one has suggested otherwise, that the fire started in the kitchen of Flat 16. That was the evidence of Mr Kebede, Ms Afeworki and Ms Kinfu, as well as the two fire crews who entered the flat and there is no evidence to suggest that it started anywhere else. It was the unchallenged view of Professor Nic Daéid that the fire started in the kitchen of Flat 16 and that was the equally clear conclusion of Bureau Veritas and Key Forensic Services, investigators retained by the MPS to examine the cause and origin of the fire.¹
- 21.3 A slightly more contentious question is whether it is possible to determine exactly where in the kitchen the fire started. In this regard, there are four principal sources of evidence: (i) the evidence of the occupants of Flat 16, Mr Kebede, Ms Afeworki and Ms Kinfu and the evidence of the firefighters who first entered the kitchen, CM Charles Batterbee and FF Daniel Brown; (ii) the images captured by the thermal imaging camera used by CM Batterbee and FF Brown; (iii) the burn patterns on the kitchen floor and skirting board, the large fridge-freezer and other appliances; and (iv) the evidence of Dr Glover based on his examination of the relevant electrical installations and materials recovered from Flat 16.

The evidence of the occupants of Flat 16 and the firefighters

- 21.4 The first source is that of the witnesses, Mr Kebede, Ms Afeworki, Ms Kinfu, CM Batterbee and FF Brown. In his call to the fire brigade and when urging Ms Kinfu to leave the flat, Mr Kebede stated unambiguously that the fridge was on fire. (He later made it clear that he was referring to the large fridge-freezer at the south-east end of the kitchen.) This evidence is consistent with WM Michael Dowden's evidence about the information he had received from Mr Kebede very soon after arriving at the tower, namely, that the fire was in the kitchen and involved "the fridge".

¹ Bureau Veritas report (dated 7 November 2017) [MET00007996] paragraph 15.1 p. 37.

- 21.5 CM Batterbee, who had entered the kitchen soon after 01.14, recalled that the fire was in the area of the large fridge-freezer² and, having put the fire out, he remembered telling FF Brown that: “I could see what I thought was the fridge and cupboards alight”,³ that is to say, the large fridge-freezer. It was this fridge-freezer that FF Brown inspected, noting heavy damage around the top 25%.⁴

The thermal imaging camera footage

- 21.6 The second source of evidence is the thermal imaging camera footage. CM Batterbee and FF Brown captured images, timed at 01.14, which showed an elevated temperature at the south-east end of the kitchen in the area of the window and the space between the window and the large fridge-freezer.⁵ Footage, captured at 01.15, showed the large fridge-freezer involved in the fire.⁶ No other area of the kitchen was shown to be involved in the fire at that stage.

Burn patterns

- 21.7 The third source of evidence is the burn patterns in the kitchen, particularly those on the floor where the large fridge-freezer stood, which were the subject of evidence from Professor Nic Daéid.
- 21.8 The following photographs show the extent of the burn marks on the large fridge-freezer itself.
- 21.9 Figure 21.1 is a photograph of the side of the large fridge-freezer facing the kitchen window. There are no burn marks on the laminate floor to the left of the appliance. The burn marks illustrated in figure 21.1 are, as Professor Nic Daéid noted, mirrored on the opposite side of the appliance, as illustrated in figure 21.2.
- 21.10 Figure 21.3 shows the appliance’s door. In Professor Nic Daéid’s view, the fire pattern on the door suggests that combustible materials to the left of the large fridge-freezer (that is to say, between the large fridge-freezer and the south-east wall) were burning during the early stages of the fire. This fire pattern could also have been influenced by ventilation effects from the nearby open window.

² Batterbee Day 12/73/11-21.

³ [MET00012871] p. 7.

⁴ [MET00005251] p. 3.

⁵ Professor Nic Daéid supplemental report [NNDS00000001] p. 32 Fig. 19(a) and (b).

⁶ Professor Nic Daéid supplemental report [NNDS00000001] p. 32 Fig. 19(c).

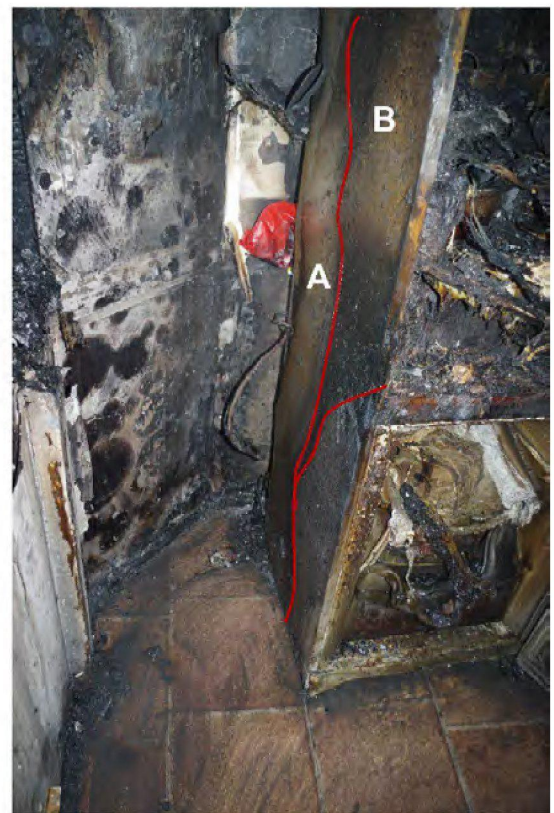
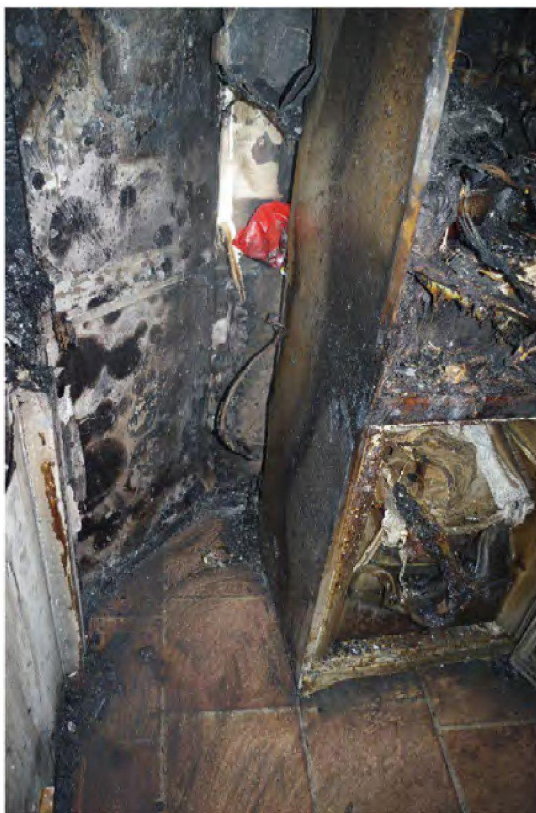


Figure 21.1



Figure 21.2



Figure 21.3

21.11 The following photographs show the burn pattern on the floor below the large fridge-freezer.



Figure 21.4



Figure 21.5

- 21.12 The burn pattern shows that the laminate floor beneath the large fridge-freezer was exposed to heat or flame to a greater extent than that on either side of the appliance. It is significant that the floor on either side of the place where the large fridge-freezer had been standing is undamaged. It is also of significance that the skirting board immediately behind the large fridge-freezer had been burnt away. In her oral evidence, Professor Nic Daéid carefully reviewed the burn patterns on the floor and on the large fridge-freezer, as well as the burnt-away skirting board behind the large fridge-freezer. She concluded as follows:

“Looking at these burn patterns in particular, the burn pattern to the skirting board and also the damage to the sides in particular of the outside of the tall fridge freezer, where the damage runs from the bottom to the top, it would be my view that the fire was originally orientated in the base of the fridge freezer.”⁷

Dr Glover’s evidence

- 21.13 Professor Nic Daéid’s opinion is supported by the fourth principal source of evidence, namely, Dr Glover’s analysis of the electrical installations within, and certain artefacts recovered by the fire investigators from, Flat 16.
- 21.14 It should be noted that Dr Glover’s analysis was confined to the area of origin of the fire provisionally identified by Professor Nic Daéid and Professor Bisby in their first reports, that is to say, the south-east end of the kitchen of Flat 16. That was an appropriate basis upon which to proceed for three main reasons: first, because no one had identified any other potential area of origin; secondly, because Bureau Veritas had also identified the south-east end of the kitchen as the area of origin; and, thirdly, because neither Professor Nic Daéid nor Bureau Veritas had found any evidence to implicate any of the electrical appliances elsewhere in the kitchen (namely, the washing machine, sandwich maker, kettle, toaster, microwave and smoke detector) in the start of the fire.
- 21.15 The starting point of Dr Glover’s analysis is the consumer unit in Flat 16 containing the circuit breakers, which is illustrated in figure 21.6 below.

⁷ Professor Nic Daéid oral evidence Day 83/67/13-18.

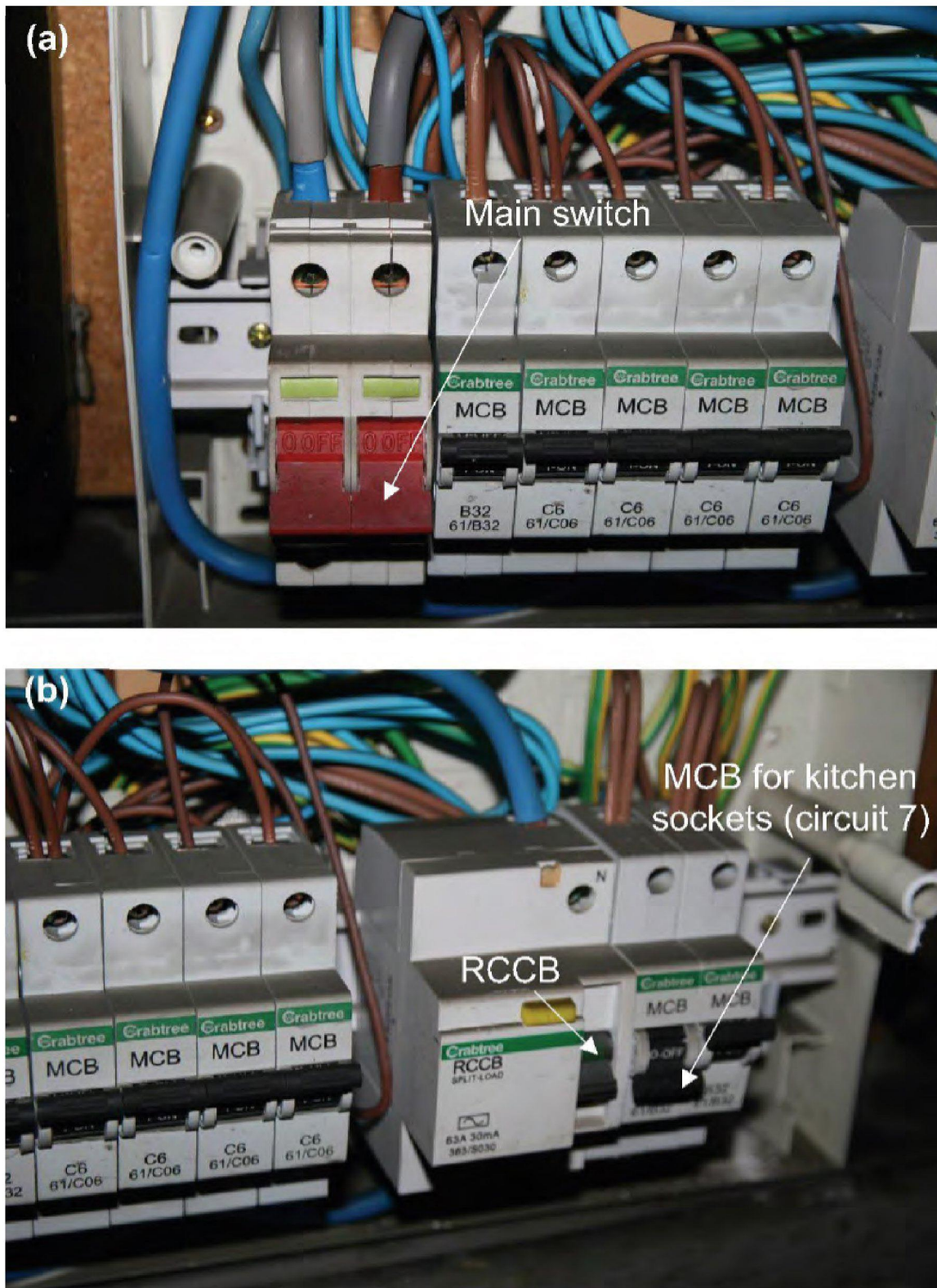


Figure 21.6

21.16 As can be seen, the following are in the “off” position:

- the main switch;
- the circuit breaker for Circuit No. 7, which operated on the electricity supply to the kitchen sockets; and

- c. the circuit breaker for the residual current detector (RCCB). This circuit breaker protects Circuit No. 7 (the kitchen) and Circuit No. 8 (power sockets elsewhere in the flat).

The other circuit breakers are in the “on” position.

- 21.17 As described above, Mr Kebede said that, before leaving Flat 16, he had turned off the electricity supply using the main switch. No evidence has been adduced that casts doubt on Mr Kebede’s recollection and there is no evidence that any firefighter, fire investigator or any other person turned off the main switch in the consumer unit. In the circumstances, I am quite satisfied that Mr Kebede did turn the main switch off before he left the flat.
- 21.18 This evidence is important in identifying the area of origin of the initial fire. If Mr Kebede did turn off the main switch, all the electrical circuits in Flat 16 would then have been disconnected from the electricity supply and would no longer have been capable of being energised. No circuit breaker could therefore have been tripped after the main switch had been turned off. Ms Afeworki had made herself a cup of tea (presumably using the kettle) earlier in the evening and had taken some bread out of the fridge-freezer.⁸ She confirmed that the fridge-freezer had been working at that time.⁹ Ms Kinfu had also used the kettle to make herself a cup of tea¹⁰ before going to bed at around 22.00 and when questioned by the police after the fire said that the fridge had been working normally.¹¹ I can therefore confidently find that Circuit No. 7 had been energised until shortly before the fire. The circuit breaker protecting Circuit No. 7 must therefore have been tripped before the main switch was turned off and before or during the early development of the fire.¹²
- 21.19 Dr Glover identified two possible sequences by which the circuit breaker protecting Circuit No. 7 and the RCCB had both been tripped:
- a. the first was that the two circuit breakers had been tripped simultaneously by a single event, a short circuit or overcurrent in Circuit No. 7 (or an appliance connected to it) that also involved a live wire shorting or arcing to ground or a metallic connection to ground; and
 - b. the second was that the circuit breaker for Circuit No. 7 had been tripped by a short circuit or overcurrent in that circuit without any shorting to ground and that the RCCB had been tripped by a second, separate event.
- 21.20 Dr Glover pointed out that the RCCB could not have been tripped before the circuit breaker protecting Circuit No. 7, because in that event that circuit would no longer have been energised and the circuit breaker protecting it could not have been tripped. The second sequence therefore involved an event which tripped circuit breaker No. 7 followed by a second event which tripped the RCCB. In his report Dr Glover expressed no preference between these two possible sequences,¹³ but in his oral evidence he said that in the light of other evidence he had since looked at he considered it more likely that there had been two separate events.¹⁴ For present purposes, however, nothing turns on this, because, whichever sequence is correct, the circuit breaker protecting Circuit No. 7 must have been tripped while the circuit was still energised.

⁸ Afeworki witness statement 18 June 2017 [MET00006341] p. 2.

⁹ Afeworki witness statement 21 May 2018 [IWS00000280] paragraph 10 pp. 3-4.

¹⁰ Kinfu witness statement 24 May 2018 [IWS00000457] paragraph 9 p. 1.

¹¹ Kinfu witness statement 16 June 2017 [MET00006350] pp. 2-3.

¹² This is a summary of the Glover report [JDGR00000001] pp. 10-11.

¹³ Glover report [JDGR00000001] p. 11.

¹⁴ Dr Glover oral evidence Day 82/3/18-34/3.

- 21.21 To narrow down the area of origin Dr Glover examined the electrical appliances in the south-east end of the kitchen including those that were connected to Circuit No. 7. His main conclusions can be summarised as follows:
- a. The small fridge can be excluded from consideration as there is no evidence that it had been plugged into any socket on the night of the fire.¹⁵
 - b. The old freezer can also be excluded. Mr Kebede and Ms Afeworki said that this appliance was not in use and their evidence is corroborated by the absence of any indication that it had been plugged into any socket on the night of the fire.¹⁶
 - c. The extension lead was not implicated in the fire. No plug was found in any of the four sockets of the extension lead and no arc damage to the internal current-carrying components was found. In any event, the extension lead would have been supplied by a socket on Circuit No. 8 and, if at the time of the fire it had been plugged into a socket in the living room, it would have had nothing to do with whatever tripped the circuit breaker for Circuit No. 7. Moreover, Dr Glover considered it implausible that a fire could have begun in the living room (where Mr Kebede was sleeping) and progress through the sliding doors separating the living room from the kitchen without waking him before the smoke alarm in the kitchen sounded.¹⁷
 - d. The mitad did not cause the fire as there was no evidence that it had been plugged into any socket on the night of the fire and there is no evidence of any arc damage to it.¹⁸
 - e. The weight of the evidence indicated that the extractor fan (fixed in the kitchen window) was not involved in starting the initial fire. The short circuit or overcurrent that caused Circuit No. 7 to trip did not occur in the extractor fan or in any related component. If it had, the three-amp fuse in the isolator switch would have blown more quickly than the circuit breaker, which had not happened. Furthermore, no arc damage or any other signs of abnormal electrical activity were found in the components related to the extractor fan.¹⁹
 - f. The kitchen lighting did not cause the fire. The lighting was supplied by Circuit Nos. 2 and 3, both of which were found in the “on” position, thereby confirming that there was no short circuit or overcurrent sufficient to trip either of the six-amp circuit breakers protecting them.²⁰
 - g. Similarly, the cooker can also be excluded from consideration.²¹ The cooker was supplied by Circuit No. 1 which was in the “on” position. This confirms that there was no short circuit or overcurrent sufficient to trip the 32-amp circuit breaker for Circuit No. 1. The evidence indicates that the four hob switches were “off” and that the heating plates were therefore not energised. The fact that the cooker only sustained superficial heat and fire damage is inconsistent with its having played any causative role.
 - h. Finally, Dr Glover excluded the large fridge-freezer’s power supply cord as no arc damage was observed.²²

¹⁵ Glover report [JDGR0000001] paragraph 7.3 p. 30.

¹⁶ Glover report [JDGR0000001] paragraph 8.3 pp. 33-34.

¹⁷ Glover report [JDGR0000001] paragraph 6.5 p. 27.

¹⁸ Glover report [JDGR0000001] paragraph 10.3 p. 39.

¹⁹ Glover report [JDGR0000001] paragraph 11.7 p. 49.

²⁰ Glover report [JDGR0000001] paragraph 13.5 p. 64.

²¹ Glover report [JDGR0000001] paragraph 5.5 p. 23.

²² Glover report [JDGR0000001] paragraph 16.2(2) p. 77.

- 21.22 Dr Glover’s analysis (with which Professor Nic Daéid agreed²³) therefore eliminated all the electrical appliances in the south-east end of the kitchen as possible sources of an electrical fire, apart from the large fridge-freezer. For this reason (as well as others) Dr Glover concluded (and Professor Nic Daéid agreed) that the most probable area of origin was the large fridge-freezer.²⁴
- 21.23 Dr Glover drew additional support for his conclusion from two exhibits, MJS/1, a section of electrical conductor taken from a collection of wiring recovered from bedroom 2 of Flat 16,²⁵ and JDG/1, a small section of wire found in a plastic bag in the old freezer which had stood beneath the kitchen window. Analysis revealed that both showed arc damage. In Dr Glover’s view, it was improbable that the arc damage to MJS/1 had been sustained in the bedroom as circuit breaker No. 8, which protected all the sockets other than those in the kitchen, had not been tripped. It was also improbable that JDG/1 had suffered arc damage in the old freezer as there was evidence that the old freezer had not been plugged in on the night of the fire.²⁶ Given that both exhibits consist of 24 strands of wire each approximately 0.16-0.18mm in diameter, both are consistent with a wire from either the run capacitor or an internal jumper wire within the relay compartment of the large fridge-freezer.²⁷ Both exhibits are also consistent with a segment from the wiring of the large fridge-freezer. In the circumstances, the combination of evidence of arc damage and the similarity of the exhibits to wiring found in the large fridge-freezer point to the latter as the area of origin.
- 21.24 In its closing submissions Whirlpool Corporation (Whirlpool), the manufacturer of the large fridge-freezer, challenged Dr Glover’s conclusions in a number of respects, but since it had not asked me to consider evidence from any expert witness whose opinions differed from those of Dr Glover, it could do no more than argue that his reasoning was inherently unreliable. For example, it said that his preferred explanation of the tripping of circuit breaker No. 7 and the RCCB was implausible, because it was not reasonably possible in the time available for smoke to have entered one of the sockets served by Circuit No. 8 so as to trip the RCCB. However, that is a proposition that calls for the support of expert opinion evidence of a kind that was conspicuously lacking, and in any event takes the matter no further. Whirlpool also took issue with Dr Glover’s evidence about the significance of MJS/1 and JDG/1, but again without the support of any expert evidence, other than opinions expressed by Key Forensics and Bureau Veritas, neither of whose investigators I was asked to hear.
- 21.25 In general, I found Dr Glover a persuasive witness, but neither of these questions is ultimately of any significance in the light of the evidence relating to the tripping of circuit breaker No. 7. No explanation for that was put forward which did not involve the large fridge-freezer and as such it points strongly to an electrical fault having occurred within that appliance.

Conclusion – the fire started in the fridge-freezer

- 21.26 Although some questions remain unanswered, the evidence, viewed as a whole, leaves me in no doubt that the fire originated in the large fridge-freezer. Although Whirlpool argued that no single piece of evidence pointed “irresistibly” or “uniquely” to that conclusion and that therefore it was not possible to determine the cause of the fire, in my view the combined force of the evidence as a whole points inexorably to that conclusion. It is true that the investigation of the fire scene was not carried out with the degree of rigour that Professor Nic Daéid would

²³ Professor Nic Daéid oral evidence Day 83/76/1-4.

²⁴ Glover report [JDGR0000001] paragraph 16.2(1) p. 77.

²⁵ Summary of how the artefact was recovered in Glover’s report [JDGR0000001] paragraph 4.2 p. 17 and paragraph 4.4 p. 19.

²⁶ In relation to both exhibits: Glover report paragraph 4.4 pp. 19-20.

²⁷ Glover report [JDGR0000001] paragraph 12.9 p. 57.

have wished and that her preliminary report was couched in cautious terms, but in her final report and her oral evidence she was able to express a firm conclusion based on the whole of the evidence. Dr Glover's forensic electrical analysis persuasively identifies the area of origin as the large fridge-freezer. His conclusions are consistent not only with the evidence of Mr Kebede and the crew who first fought the fire but also with the physical evidence of the burn patterns both to the large fridge-freezer itself and to the floor where it had been standing and with the damage to the skirting board behind it. Whirlpool's suggestion that the fire could have originated from a burning cigarette end thrown from a window higher up the building falling into the kitchen of Flat 16 and igniting unknown materials on the floor next to the large fridge-freezer is fanciful. Such an explanation is not consistent with Mr Kebede's evidence or with the burn pattern on the floor and does not provide a convincing explanation for the tripping of circuit breaker protecting circuit No. 7.

2 How did the fire start?

- 21.27 Two important points need to be made at the outset. First, none of those who examined the large fridge-freezer, or the kitchen of Flat 16 more generally, found any evidence to suggest that the fire had been started deliberately or that it had been caused by an improvised or inexperienced attempt to repair a defect in the appliance.²⁸ Whatever the origin of the initial fire, the evidence indicates that it was accidental. Mr Kebede in particular bears no blame for what occurred in his flat, much less for the catastrophic events that followed. On the contrary, he did exactly what a responsible person might be expected to do in the circumstances and his presence of mind in switching off the electricity as he left the flat enabled important evidence to be gathered about the origin of the fire.
- 21.28 The second point arises from longstanding concerns raised by residents about electrical "surges" affecting appliances within the tower. RINA Consulting (RINA) were retained by the MPS to assess the electrical supply and distribution infrastructure.²⁹ In short, RINA found no damage or significant degradation (other than that caused by the fire) nor any major defects in the electrical supply system. RINA found no evidence to suggest that the electrical infrastructure of the tower was in any way responsible for the fire.³⁰
- 21.29 Identifying the precise point of ignition within the large fridge-freezer poses a significant challenge. In the light of Dr Glover's evidence, and in the absence of any evidence suggesting some other cause, Professor Nic Daéid was satisfied that the cause of the fire was probably electrical. Beyond that she did not think that there was enough evidence to enable her to reach a more definite conclusion.³¹
- 21.30 In an addendum to his report Dr Glover put forward the hypothesis that the origin of the fire was the overheating of a defective crimp connection within a wire connector in the large fridge-freezer.³² Whirlpool strongly challenged that part of Dr Glover's evidence, but again without the support of any expert evidence. Having considered the addendum to Dr Glover's report as well as his oral evidence, I have come to the conclusion that further investigations would be required before any reliable conclusion could be reached on that question. That could involve considerable time and expense, which might, or might not, enable a firm

²⁸ Professor Nic Daéid supplemental report, [NNDS00000001] paragraph 8.8.32 p. 79.

²⁹ Report (dated November 2017) [MET00007807] paragraph 1 p. 4.

³⁰ It is noted that a neutral cable feeding one of the main risers to the flats had been replaced sometime after 2002. This is broadly relevant to the surges reported in 2013 as a loss of continuity in the main neutral conductors may lead to voltage fluctuations which are revealed by events similar to those experienced in 2013. They are not, however, relevant to the cause of the fire.

³¹ Professor Nic Daéid supplemental report [NNDS00000001] paragraph 9.4 p. 97, and her oral evidence Day 83/76/1, 83/82/1-12.

³² Glover Addendum [JDGR0000019] section 2.

conclusion to be reached. Whatever the outcome, however, it could not detract from the overwhelming weight of the evidence that the fire started somewhere in the large fridge-freezer. A fire originating in an electrical domestic appliance is not an uncommon event; the important question for this Inquiry is how an ordinary domestic fire could have had such catastrophic consequences for the whole building and its occupants. Further examination of parts from the large fridge-freezer will not provide the answer to that question. In my view it is better to accept that it is not possible within the scope of this Inquiry to identify with confidence the precise nature of the defect in the large fridge-freezer which caused the fire.

Chapter 22

The Escape of the Fire from Flat 16

- 22.1 A key phase in the development of the fire was its escape from the kitchen of Flat 16 into the exterior cladding system. There is little or no direct evidence of how the fire developed between the time Behailu Kebede left the flat and the appearance of flame outside the kitchen window, but there is evidence from which it is possible to draw certain inferences about what occurred. It is important to understand as far as possible the process by which the fire escaped, not least because at that point it developed from a relatively minor domestic kitchen fire to a major fire within the external cladding system.
- 22.2 A number of the Inquiry's experts addressed this in their written and oral evidence. Although they approached that task using different methods of analysis, those analyses were complementary and demonstrated that there was considerable agreement about the routes by which the fire is likely to have escaped.

1 Professor José Luis Torero

- 22.3 Professor Torero considered it unlikely that it would ever be possible to establish with precision how the fire developed in the first few minutes and he therefore based his analysis primarily on the potential range of fire dynamics within the compartment of origin. Using the available information about the dimensions of the kitchen, the probable size of the fire and the materials present in the windows and external cladding, he was able to draw conclusions about the likely sequence of events.¹
- 22.4 In order to ignite the components of the windows and cladding it was necessary for them to be heated to ignition temperature by direct flame impingement or by some other means, such as heat radiated from the accumulated smoke produced by burning materials, generally known as the "smoke layer". Buoyed up by hot gases, the smoke layer forms at ceiling level and increases in depth as the fire continues to produce smoke. If there is insufficient ventilation and the smoke cannot escape, the smoke layer will continue to descend, eventually extinguishing the fire due to lack of oxygen. However, if there is sufficient ventilation to allow the escape of some of the smoke, the smoke layer as it descends increases in temperature, with the result that heat is transferred to other combustible materials by radiation. If sufficient heat is transferred to the contents of the room, all the combustible materials in the room ignite.² This is the phenomenon known as "flashover", which occurs when the smoke layer heats the room to such an extent that all the combustible materials in the room ignite as a result of radiated heat.³ Professor Torero explained that by establishing the range of magnitude within which the size of the fire in Flat 16 must have fallen and calculating the resulting thermal conditions, it was possible to determine whether the various materials surrounding the windows and forming the cladding system could have been brought to ignition. The information required to carry out that calculation included the size and configuration of the kitchen, the likely sources of ventilation and the extent of the damage caused by the fire as shown in photographs taken after the event.

¹ Professor Torero oral evidence Day 77/17/5-13, and his supplemental report [JTOS0000001] pp. 2/2-7.

² Professor Torero supplemental report [JTOS0000001] p. 37 lines 1109-1122 and p. 38 Fig. 6.

³ Professor Torero oral evidence Day 77/18/1-2/13-15.

- 22.5 The kitchen is relatively small in size (4.8 metres long, 1.9 metres wide and 2.35 metres high⁴), with three principal ventilation sources: the door, the window and the sliding door to the living room. It is clear from photographs taken after the fire that it did not reach “flashover”.⁵ Had flashover occurred, the damage to the kitchen would have been much more extensive and would, for example, have included burning of the paintwork on some of the kitchen appliances which remained relatively unscathed.⁶
- 22.6 Based on that information and using basic computer modelling (referred to as a “simple zone model”) Professor Torero calculated that at one extreme the fire in the kitchen of Flat 16 was unlikely to have achieved a peak heat release rate (HRR) of more than 300kW (if an ultra-fast fire) and at the other extreme was unlikely to have achieved an HRR of less than 60kW (if a slow fire).⁷ In his view that indicated that the fire in Flat 16 was “relatively minor”⁸ and typical of a common kitchen pan fire.⁹ In layman’s terms an HRR of 60kW is “no bigger than a waste paper basket” and an HRR of 300kW “half a chair”¹⁰ Those fire sizes correspond to a hot smoke layer temperature of between 220°C and 110°C.¹¹
- 22.7 These conclusions were verified by using more sophisticated tools, including computation zone modelling (CFAST) and computational fluid dynamics modelling (CFD).¹² Those tools enable more complex scenarios to be considered,¹³ including the impact of opening and closing the doors and windows to the kitchen.¹⁴ That further modelling indicates that the kitchen door to Flat 16 could not have been open during the fire, since that would have brought the compartment to flashover.¹⁵ It also indicates that his conclusions are not significantly affected by whether the smaller window was open or closed.¹⁶
- 22.8 Professor Torero’s conclusions are further supported by the results of tests carried out by the MPS to establish the peak HRR of fridge-freezers comparable with the one that was present in the kitchen of Flat 16.¹⁷ Although he accepted in oral evidence that the temperatures in the kitchen could have been slightly higher than those indicated by the basic model (for example, if the window had been open), he was clear that any increase was not sufficient to make a material difference to his conclusions, given the range of temperatures involved.¹⁸

⁴ Professor Torero supplemental report [JTOS00000001] p. 32 line 1011.

⁵ Professor Torero supplemental report [JTOS00000001] p. 32 lines 1004-1007.

⁶ Professor Torero oral evidence Day 77/18/18-19/2.

⁷ Professor Torero supplemental report [JTOS00000001] p. 38/1155-1160 and p. 39 Table 2 and his oral evidence Day 77/22/23-23/12. For this zone model all openings (doors and windows) are assumed to be closed – supplemental report [JTOS00000001] p. 37/1133-1134.

⁸ Professor Torero supplemental report [JTOS00000001] p. 131 line 3067.

⁹ Professor Torero supplemental report [JTOS00000001] p. 3 lines 35-36.

¹⁰ Professor Torero oral evidence Day 77/23/14-21.

¹¹ Professor Torero supplemental report [JTOS00000001] p. 38 lines 1155-1160.

¹² Professor Torero supplemental report [JTOS00000001] pp. 137-155 at Appendix B.

¹³ For an explanation of the three models: Professor Torero oral evidence Day 77/26-27.

¹⁴ A window identical to that in the kitchen of Flat 16 can be seen at Fig. 8.23 of Dr Lane’s supplemental report [BLAS00000008] pp. 8-21. This consisted of a larger window to the left (which could be tilted inwards or opened inwards), a smaller window to the right which could be opened inwards and an extractor fan unit to the top right. The evidence of Behailu Kebede indicates that the larger window was tilted inwards by a couple of inches (40-50mm) and the smaller window was open by approximately 10 inches: Professor Bisby oral evidence Day 78/118/4-10 and [MET00006339] p. 2.

¹⁵ Professor Torero supplemental report [JTOS00000001] p. 152/3439-3451. With the open door, temperatures would have been in the order of 400°C-500°C hotter near the compartment ceiling. The HRR necessary to deliver flashover would have been around 1000kW: Professor Torero oral evidence Day 77/24/17-19.

¹⁶ Professor Torero supplemental report [JTOS00000001] p. 152 lines 3435-3438.

¹⁷ After 7 minutes those tests showed a peak HRR of 400kW (which then diminished to approx. 300kW by 10 mins); results which were consistent with the 60-600kW range, given the different conditions in which those tests were carried out (i.e. under a hood rather than in a small space comparable to Flat 16): Professor Torero supplemental report [JTOS00000001] pp. 143-147 and his oral evidence at Day 77/32-34.

¹⁸ Professor Torero oral evidence Day 77/41/11-21.

22.9 The central points which follow from Professor Torero's analysis are:

- a. that a smoke layer with a temperature in the range of approximately 220°C to 110°C (based on fires with peak HRRs of 300kW to 60kW), is not hot enough to ignite any of the window or cladding components (i.e. the uPVC window surrounds, the PIR insulation or the polyethylene core of the ACM panels), given their ignition temperatures, which range from approximately 306°C to 415°C.¹⁹ (Professor Torero explained that a spill plume of hot smoke coming out of the compartment and mixing with cold air would be able to ignite the external ACP cladding only if there was a large fire with ventilation to support it and thus under post-flashover conditions.);²⁰
- b. that smoke temperatures in the range of approximately 220°C to 110°C are likely to have resulted in significant changes to the uPVC window surrounds, causing them to lose their stiffness²¹ and become in the words of Professor Torero "like gum...very, very viscous".²² The fact that the uPVC window jambs were held in place by adhesive, with no mechanical fixings, made them all the more vulnerable to deformation in rising temperatures;²³ and
- c. that once the uPVC melts, deforms and mechanically fails, "it opens a direct path for any flame to actually impinge on any of the combustible materials on the inside".²⁴ Photographs of the interior of the building taken after the fire show many examples of this type of failure:

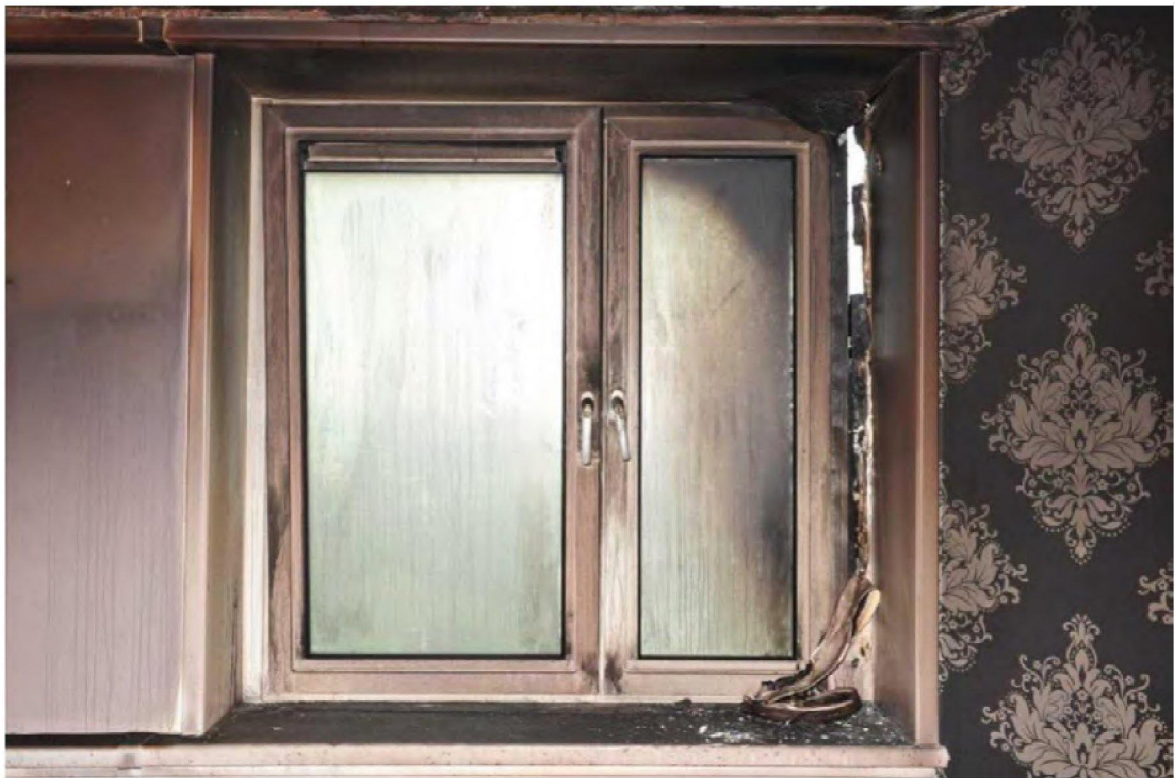


Figure 22.1²⁵

¹⁹ Professor Torero [JTOS0000001] p. 37 Table 1.

²⁰ Professor Torero oral evidence Day 77/47/25-48/21 and his supplemental report [JTOS0000001] p. 154/3468-155/3483.

²¹ uPVC begins to lose stiffness at around 60°C, losing 80% by 80°C and 100% by 90°C. A total loss of mechanical strength will occur within 5-11 minutes: Professor Torero supplemental report [JTOS0000001] p. 44 lines 1261-1272 and oral evidence Day 77/52-56.

²² Professor Torero oral evidence Day 77/52/9-10.

²³ Professor Torero oral evidence Day 77/56/17-57/12.

²⁴ Professor Torero oral evidence Day 77/57/20-24.

²⁵ Professor Torero supplemental report [JTOS0000001] p. 43-44.



Figure 22.2



Figure 22.3

- 22.10 Professor Torero was of the opinion that, since the smoke layer itself was not hot enough to ignite any of the window or external cladding materials, ignition must have occurred as a result of direct impingement of flame. The impingement of flame may be direct (as when a fire which is unobstructed directly impinges on a material) or indirect (as when a fire which is obstructed by an obstacle impinges indirectly by migrating along a ceiling²⁶ or wall).²⁷ Based on the ignition temperatures of the materials present around the windows and in the cladding system, it is possible to determine whether any of them could have been ignited by direct or indirect flame impingement. Having carried out that exercise Professor Torero concluded that:
- An unobstructed fire of 300kW at floor level could not have ignited the ACM panels directly above the window, since to achieve that would have required a fire in the order of 830kW. A fire of that size would, in his view, have brought the compartment to flashover, which is not consistent with its condition after the fire.²⁸
 - A fire of 300kW would have to be no farther than 3 metres from the window in order to ignite any of the combustible materials adjacent to the window (including the uPVC and the PIR insulation surrounding the windows).²⁹
 - A fire as small as 20kW directly below the window would, in theory, be capable of igniting the combustible materials at windowsill level (including the uPVC and PIR insulation).³⁰
 - If a fire that had started at floor level at the base of the fridge-freezer had found combustible materials enabling it to spread vertically it could eventually have produced temperatures high enough to ignite the Purlboard around the top of the windows. That remains a possible mechanism by which the fire spread to the window.³¹
- 22.11 Professor Torero accepted³² that hypotheses B1 and B2 put forward by Professor Bisby³³ represented the most likely ways in which the cladding had been ignited. They were:
- the impingement on the ACM panels immediately above the kitchen window of flaming and hot gases, either through an open window or through the extractor fan or the extractor fan panel, and subsequent ignition of the external ACM panels – in layman’s terms “out through a hole in the window”³⁴ (Hypothesis B1); or
 - the failure of the uPVC window jamb and attached insulation board allowing fire to penetrate into the back of the cladding cavity where it could ignite combustible materials – in layman’s terms “out through the materials in the side of the window”³⁵ (Hypothesis B2).
- 22.12 In Professor Torero’s opinion the latter was the more probable cause. He emphasised that in a compartment fire the compartment itself is always going to be hotter than the plume outside and that ignition from the inside was therefore more probable.³⁶ The moment a fire

²⁶ As explained in Professor Torero’s supplemental report [JTOS0000001] p. 51, lines 1425-1429, it is possible for fires to start behind an obstacle and migrate to the ceiling before travelling horizontally as a ceiling jet before reaching a combustible component.

²⁷ Professor Torero oral evidence Day 77/66/18-67/1.

²⁸ Professor Torero supplemental report [JTOS0000001] pp. 48-51, in particular at lines 1417-1423 and oral evidence Day 77/65/9-68/12.

²⁹ Professor Torero supplemental report [JTOS0000001] p. 50 Table 3 and Day 54/1537-1540.

³⁰ Professor Torero supplemental report [JTOS0000001] p. 49 lines 1399-1400.

³¹ Professor Torero supplemental report [JTOS0000001] p. 51 lines 1449-1452 and oral evidence Day 77/77/15-78/13.

³² Professor Torero oral evidence Day 77/61/5-62/2.

³³ Professor Bisby supplemental report [LBYS0000001] pp. 144-148.

³⁴ Professor Bisby oral evidence Day 78/111/11-16.

³⁵ Professor Bisby oral evidence Day 78/111/11-16.

³⁶ Professor Torero oral evidence Day 77/63/2-64/14.

breaks out of a compartment, the fresh air will cool the temperature of the flame making ignition by that method less likely. He also considered that the ACM panels directly above the window would be quite difficult to ignite, since aluminium has a high thermal conductivity, which would carry heat away from the polyethylene.³⁷ In his view, given the fire dynamics of the compartment, the path of flame spread had probably involved the melting and deforming of the uPVC around the windows, possibly as a result of temperatures imposed by the smoke layer itself, followed by the ignition of one of the combustible materials behind the uPVC, including the layer of PIR insulation around the windows and the EPDM membrane. The flame was then in the cladding cavity in the area of the column where it had been able to impinge on the insulation and the ACM panels.³⁸

- 22.13 Professor Torero emphasised that a “sequence of ignitions” may have occurred whereby a flame had ignited different materials, eventually igniting the ACM panels on the outside.³⁹ However, given the complexity and intricacy of the cladding system and the absence of any contemporaneous visual evidence, he thought that it would be impossible to know precisely which materials ignited first.⁴⁰ Beyond recognising that the deformation of the uPVC is likely to have occurred first, Professor Torero did not consider it realistic or helpful to seek to analyse the precise sequence in which the materials had burned.⁴¹ The properties of the materials did not indicate which had ignited first; while those with a low thermal inertia will have ignited more quickly, the order of ignition would have depended where each material was in relation to the flame.⁴² Although the presence of exposed polyethylene edges in some parts of the ACM panels could have affected the outcome, given the proximity of all of the materials, the complexity of the cavity and the nature of the fire, it was extremely difficult to identify its significance.⁴³
- 22.14 Finally, Professor Torero was clear that the extractor fan itself could be discounted as the ignition source for the ACM cladding panels. The temperature of any fire at the base of the extractor fan would have been insufficient to ignite the ACM panels present in the cladding system.⁴⁴

2 Professor Luke Bisby

- 22.15 Professor Bisby based his opinion primarily on the available photographic and video evidence from the night of the fire combined with a detailed understanding of how the materials used in the refurbishment react to fire.⁴⁵ In terms of the former he included in his written report a number of still images which show significant moments in the early development of the fire.⁴⁶ He also prepared a compilation video which combined the available footage, both for the east face of the building where the fire began,⁴⁷ and for each of the other faces, north, west and south.⁴⁸

³⁷ Professor Torero oral evidence Day 77/70/15-71/9.

³⁸ Professor Torero supplemental report [JTOS0000001] p. 46 lines 1333-47 and line 1349.

³⁹ Professor Torero oral evidence Day 77/64/10-14, 68/16-69/9.

⁴⁰ Professor Torero oral evidence Day 77/74/22-24, 76/6-7.

⁴¹ Professor Torero oral evidence Day 77/78/3-13, 79/9-25, 81/5-15.

⁴² Professor Torero oral evidence Day 77/78/25-79/25.

⁴³ Professor Torero oral evidence Day 77/82/20-83/13.

⁴⁴ Professor Torero supplemental report [JTOS0000001] p. 52 lines 1466-0053 and line 1482.

⁴⁵ Professor Bisby oral evidence Day 78/106/21-25.

⁴⁶ Professor Bisby supplemental report [LBYS0000001] pp. 113-123.

⁴⁷ [LBYS0000002].

⁴⁸ [LBYS0000004]; [LBYS0000005]; [LBYS0000006].

The video evidence⁴⁹

- 22.16 At 01.05.40 the first known video evidence of the fire was captured. This shows flames at the far-left side of the window of Flat 16 when looking from the outside and smoke is visible outside the compartment. This is a still timed at 01.05.49.⁵⁰

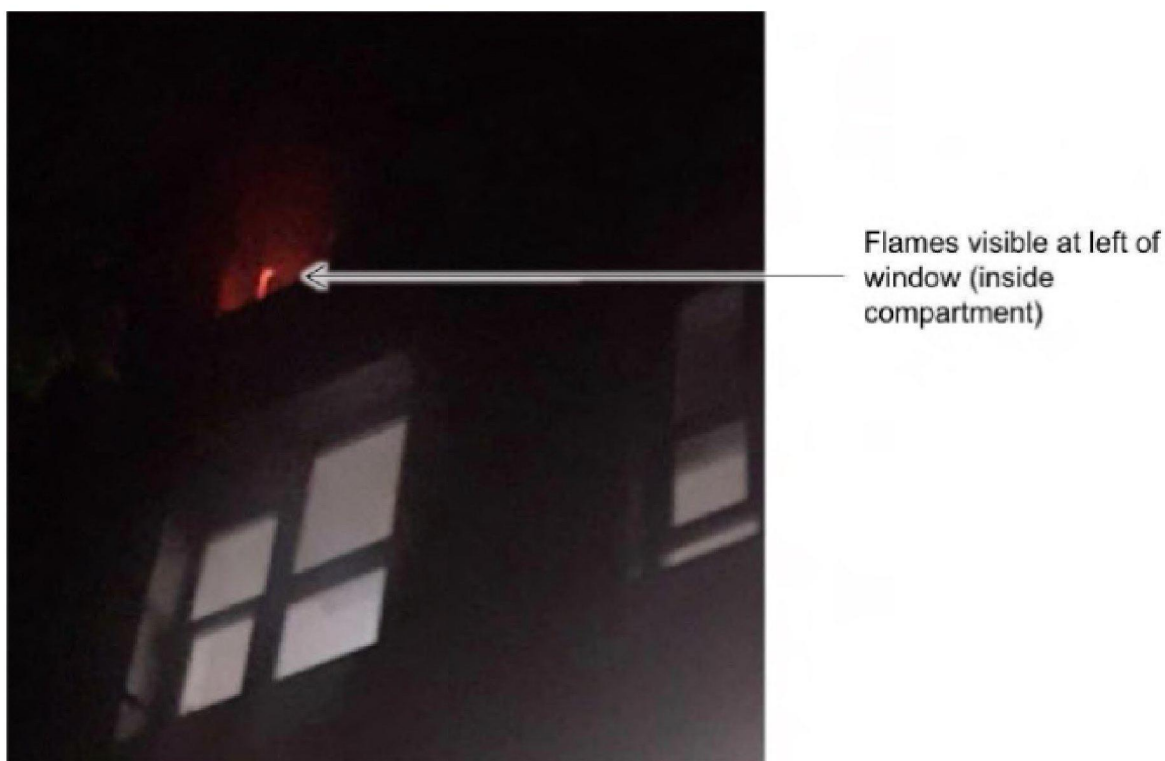


Figure 22.4

- 22.17 At 01.06 the fire appears to be located towards the lower left-hand corner of the window. During this video, smoke is visible drifting below the window; the smoke is moving from south to north and a voice can be heard saying: “Look at that [inaudible] stinks”, suggesting that the individual standing on the ground could smell the fire.⁵¹
- 22.18 By 01.07 the window infill panel and mounting of the fan unit (or possibly the fan unit itself) appears to be burning; the fan unit appears to be absent, with flames passing through or around the extractor fan mounting board and out of the window below. Smoke is visible outside the compartment and the window pane below the fan unit appears to be absent, or the window fully open, swinging inward. These are stills taken at 01.07.51.⁵²

⁴⁹ [LBYS0000002].

⁵⁰ Professor Bisby supplemental report [LBYS0000001] p. 117 Fig. 58.

⁵¹ Professor Bisby supplemental report [LBYS0000001] p. 114 sections 548-550.

⁵² Professor Bisby supplemental report [LBYS0000001] p. 118 Fig. 59 and p. 114 sections 551-555.



Flame passes under fan unit mounting



Flames visible through center of fan mounting

Figure 22.5

22.19 By 01.08 there is more smoke, and the flames appear longer. The longer flames appear to extend farther out of the window, adjacent to the cladding and particularly to the left of the window. Burning material can be seen to fall from the region around the window opening, particularly on the left-hand side near the column. These are stills captured between 01.08.06 and 01.08.21:⁵³

⁵³ Professor Bisby supplemental report [LBYS0000001] p. 119 Fig. 60 and p. 114 sections 556-559.



Figure 22.6

22.20 Between 01.09.30 and 01.09.40 the flames appear longer again and extend farther out of the window. A regular flow of burning material can be seen falling from the window opening, in particular from the bottom left-hand corner where the window meets the column. At around 01.09.36 flames appear to project out of the top of the extractor fan panel. These are stills captured between 01.09.30 and 01.09.40;⁵⁴



Figure 22.7



Figure 22.8

⁵⁴ Professor Bisby supplemental report [LBYS0000001] pp. 114/560-115/565 and p. 120 Figs. 61, 62.

22.21 At 01.09.57, in this still burning material can be seen on the ground below the kitchen window;⁵⁵

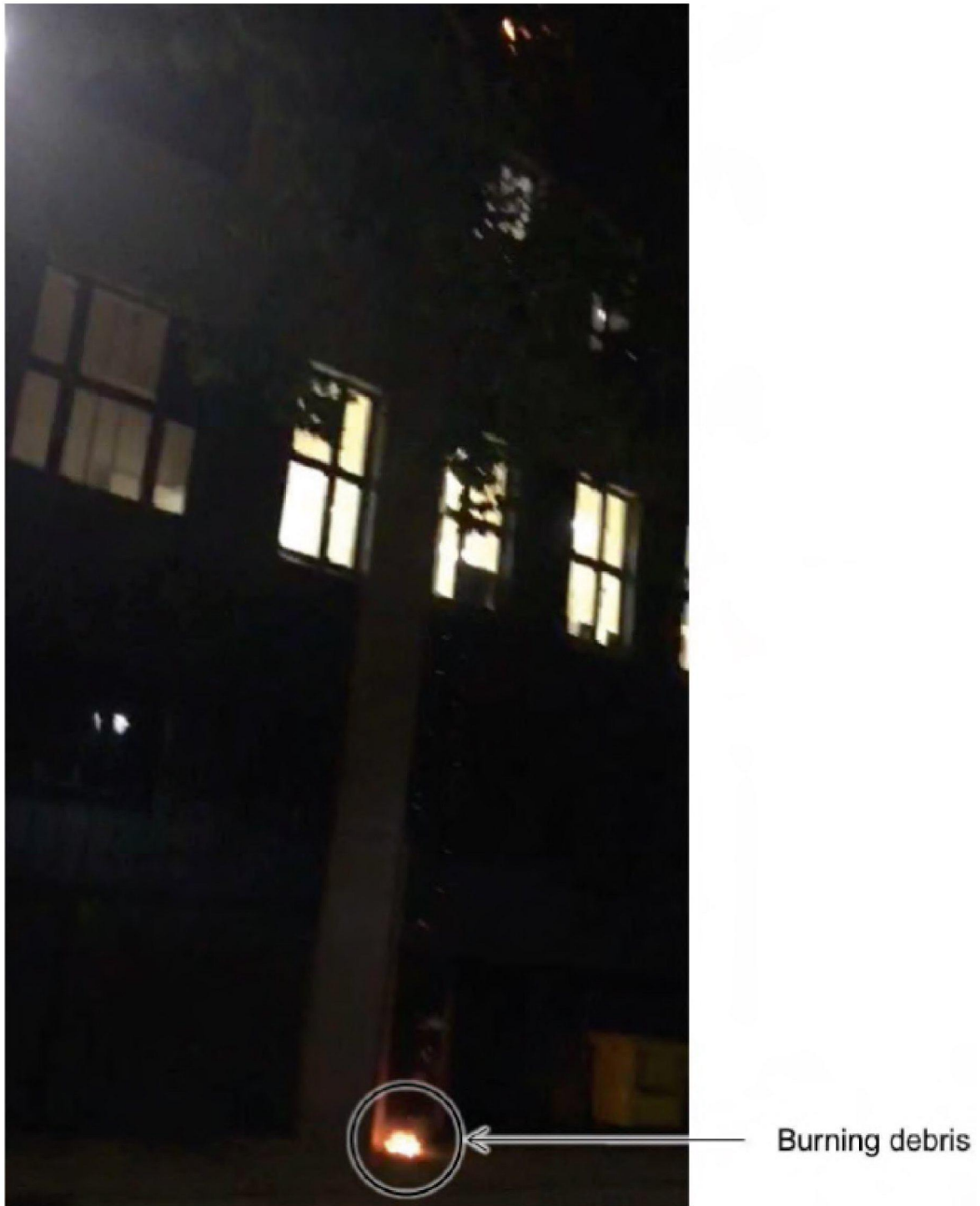


Figure 22.9

22.22 At 01.11 visible flames fill most of the observable window opening and smoke is escaping from the window. There is no external flaming on the cladding. At the top left of the window opening there is a darkened area with flame in the centre which corresponds to the location

⁵⁵ Professor Bisby supplemental report [LBYS0000001] p. 121 Fig. 63 and p. 115 section 566.

of the extractor fan and mounting panel. Burning material continues to fall from the window opening, some of which continues to burn on contact with the ground. These are stills taken from that time:⁵⁶

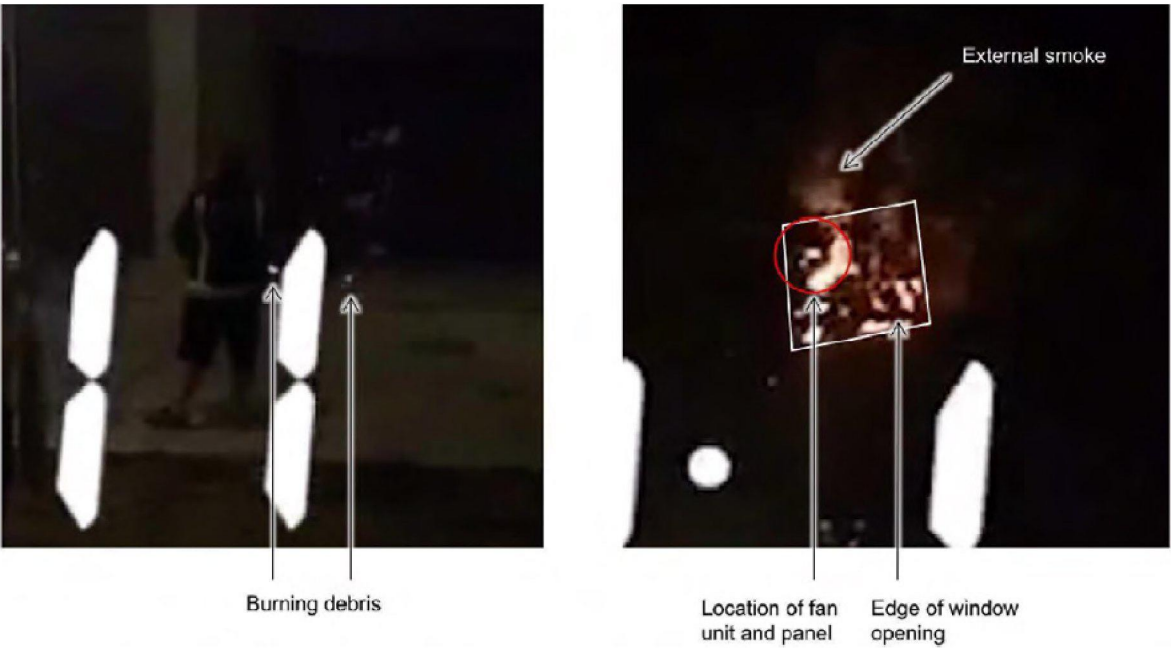


Figure 22.10

22.23 At 01.12.00 the flames appear to be longer than in previous images, but due to the over-exposure of the image it is not possible to determine to what extent they originate from the cladding or from the compartment. Immediately below the window opening, to the left, there appears to be burning material on the ACM spandrel cassettes. Burning material can be seen falling from the window opening and some is present on the ground. This is a still taken at that time:⁵⁷

⁵⁶ Professor Bisby supplemental report [LBYS0000001] p. 122 Fig. 64 and p. 115 sections 567-572.

⁵⁷ Professor Bisby supplemental report [LBYS0000001] p. 122 Fig. 65 and p. 115 sections 573-577.

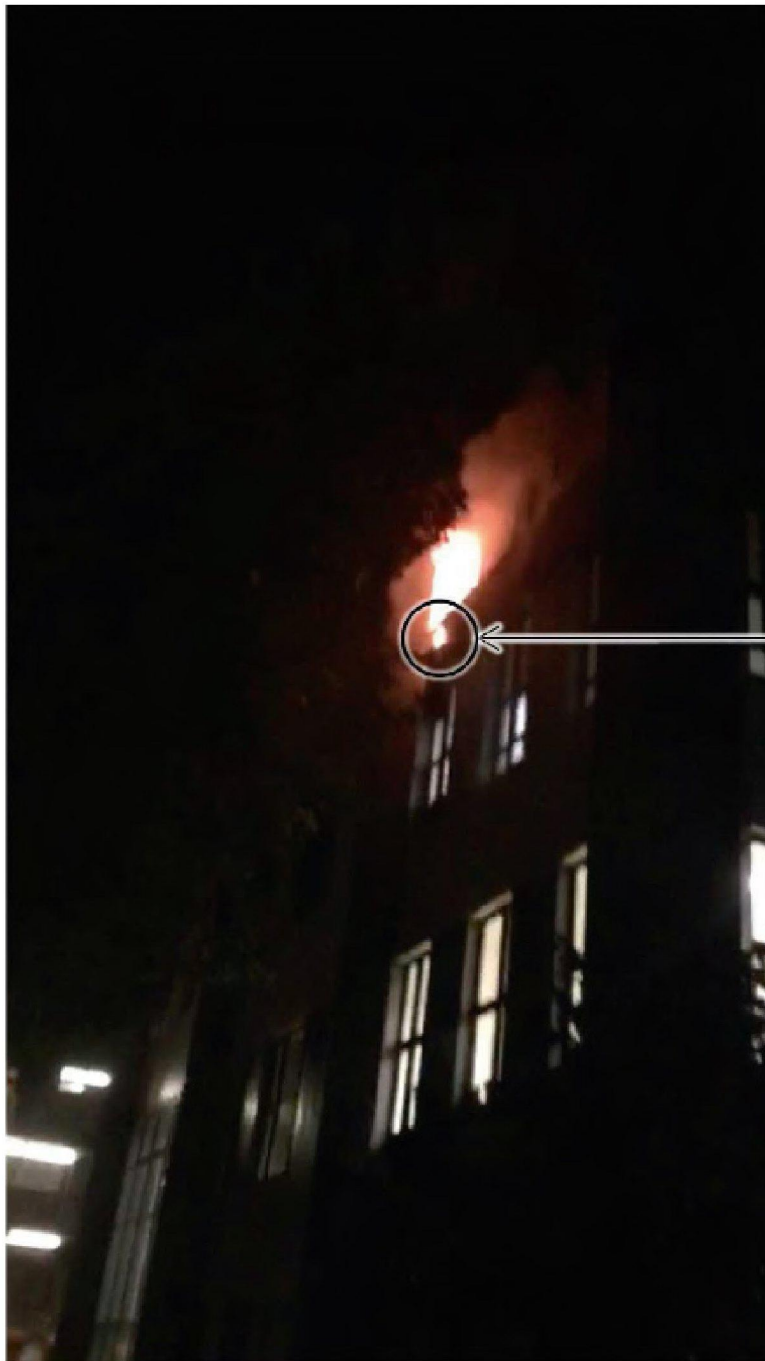


Figure 22.11

- 22.24 At 01.13.29 intermittent flames can be seen extending up from the top left corner of the window at the re-entrant corner between the column and the spandrel panel above the window. In addition, intermittent flames can also be seen in the gap between adjacent spandrel panel ACM cassettes directly above the window. By 01.14.16 continuous flaming is established at the joint between the column and the spandrel panel. Burning material continues to fall from the window opening and some burning material is present on the ground. These stills are both taken from 01.13:⁵⁸

⁵⁸ Professor Bisby supplemental report [LBYS0000001] pp. 115/578-116/583 and p. 123 Fig. 66.

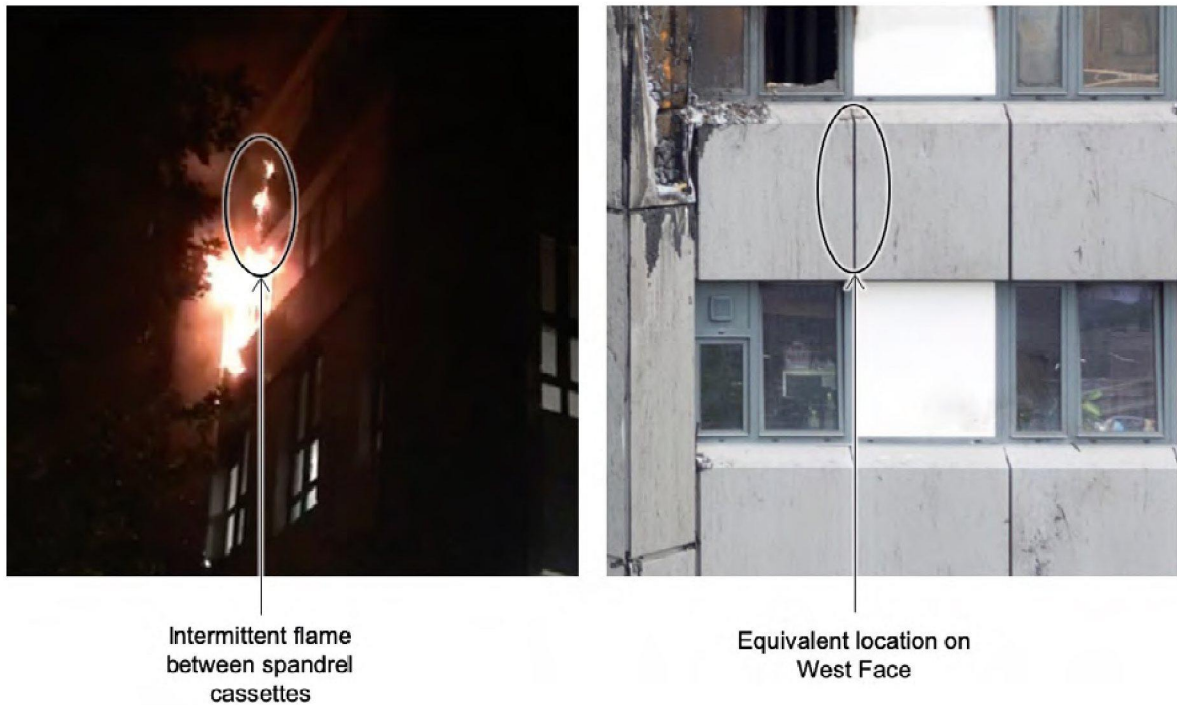


Figure 22.12a

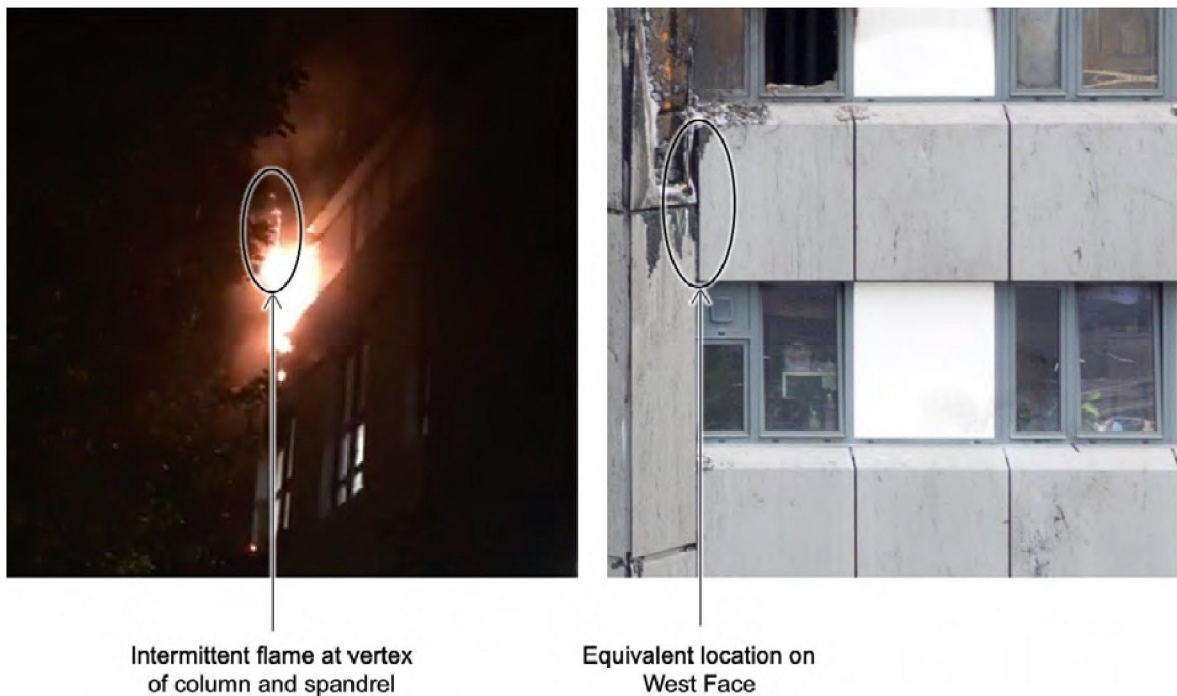


Figure 22.12b

- 22.25 From 01.14.16 the flames can be seen to grow longer in the re-entrant corner between the column and the spandrel sections of the building above the window. Continuous flaming also occurs at the joint between the column and the spandrel panel below the window opening.⁵⁹
- 22.26 At 01.14.53, there is melting and burning material on the surface of the ACM cassette panels immediately below the kitchen window. By this time the fire has also spread downwards at the joint between the column and the spandrel panels below the window and gas (or smoke)

⁵⁹ Professor Bisby supplemental report [LBYS0000001] pp. 129/605-606.

can be seen rising from this area. The flames extend significantly above the window, but it is not possible to determine whether they are extending from within the compartment or the cladding materials have become involved in the fire.⁶⁰ These are images taken from this time:⁶¹

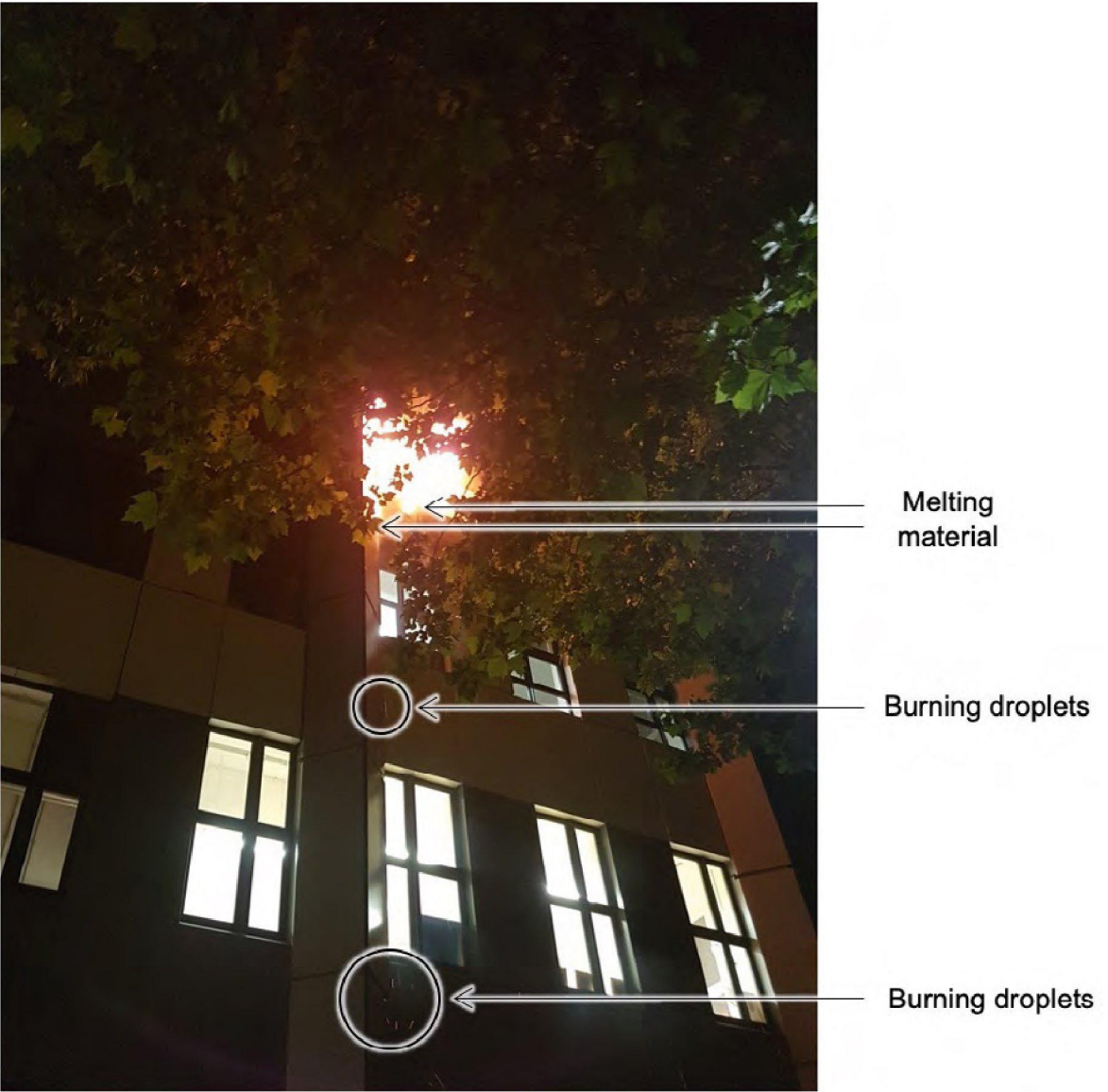


Figure 22.13

⁶⁰ Professor Bisby supplemental report [LBYS0000001] pp. 127/601-604.
⁶¹ Professor Bisby supplemental report [LBYS0000001] p. 128 Figs. 70, 71.



Figure 22.14

22.27 At 01.15.06 there is a noise which is likely to be the breaking of at least one pane of glazing within the kitchen window (this is also remarked upon by a voice in the video saying: “the glass is cracking”).⁶² This is immediately followed by an increase in flame length, which is also remarked upon by witnesses in the video, saying: “its [sic] getting bigger now”.⁶³ By 01.15.36 the cladding can be seen to be burning with some intensity and external flames are extending approximately two floors above Flat 16. These are stills taken from that time:⁶⁴



Figure 22.15

⁶² Professor Bisby supplemental report [LBYS0000001] pp. 129/608.
⁶³ Professor Bisby supplemental report [LBYS0000001] p. 129 section 609.
⁶⁴ Professor Bisby supplemental report [LBYS0000001] p. 131 Fig. 73.

- 22.28 Professor Bisby drew attention to a number of events which provide some indication of the route by which the fire spread from the kitchen into the internal cladding. By 01.09.36 dripping, burning polyethylene can be seen originating from the window at its bottom left corner.⁶⁵ He was of the opinion that, if the external cladding had ignited due to heat from flames venting directly through the open window, rather than down the side of the window, one would have expected to see the earliest evidence of dripping, burning, polyethylene originating from the ACM panels located directly above the window and not from the bottom left-hand corner of the window opening.⁶⁶ That visual evidence was, in his view, more consistent with the conclusion that the ACM column cassettes along the sides of the window had become involved in the fire first.⁶⁷
- 22.29 On that basis, Professor Bisby concluded that the most likely route of flame spread “by a nose”⁶⁸ had been through the side of the window and into the column cavity following the deforming of the uPVC window surrounds.⁶⁹ In reaching that conclusion he highlighted the particular configuration of materials at the sides of the windows,⁷⁰ as shown in this diagram reproduced from his report:⁷¹

⁶⁵ Professor Bisby supplemental report [LBYS0000001] p. 145/691 and oral evidence Day 78/122/21-23, 128/16-22.

⁶⁶ Professor Bisby supplemental report [LBYS0000001] p. 145 section 693.

⁶⁷ Professor Bisby oral evidence Day 78/135/17-136/7. Professor Torero’s supplemental report [JTOS0000001] p. 54 lines 1556-1557.

⁶⁸ Professor Bisby oral evidence Day 78/135/8-11.

⁶⁹ Professor Bisby supplemental report [LBYS0000001] pp. 146-147 sections 696-712.

⁷⁰ Professor Bisby oral evidence Day 78/135/24-136/7.

⁷¹ Professor Bisby supplemental report [LBYS0000001] p. 144 Fig. 84.

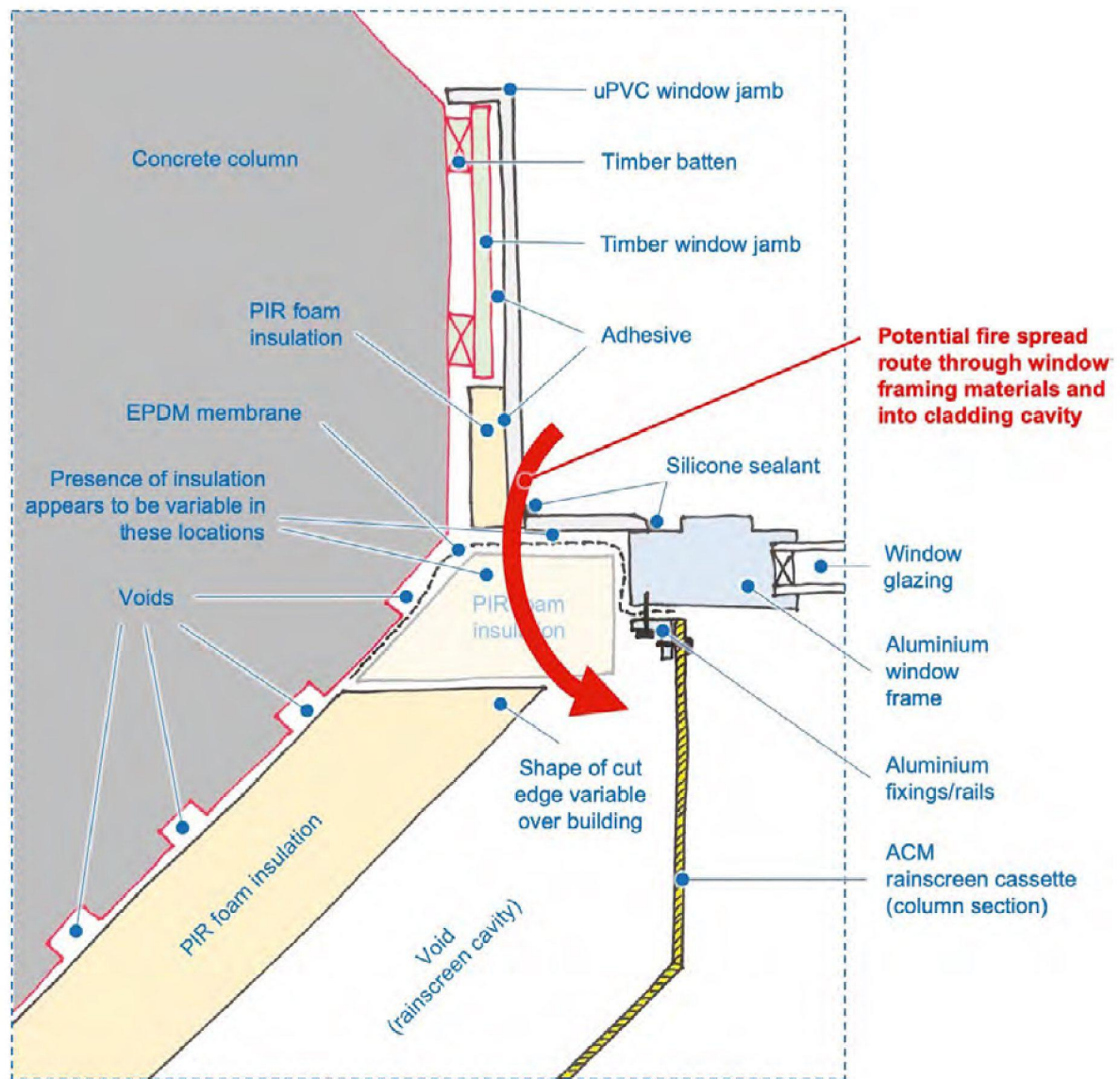


Figure 22.16

- 22.30 As he explained, if the uPVC had deformed as a result of the smoke layer temperatures in the kitchen, it would have exposed a sequence of combustible materials, including the 25mm thick PIR insulation board which was glued to the back of the uPVC and the EPDM weatherproof membrane. That membrane would, in his words, have provided negligible resistance to flame impingement and would have burned through quite rapidly. Once that had happened, the flame would have been able to enter the back of the cladding cavity around the column.⁷² In his written report Professor Bisby noted that the PIR insulation in the columns presented as a cut edge, unprotected by any foil facing.⁷³ In addition, the ACM panels on the columns at the side of the window had cut edges with directly exposed polyethylene, as shown in figure 22.16 above.⁷⁴ At this location, an extensive vertical cavity was also present running the full height of the building.⁷⁵

⁷² Professor Bisby oral evidence Day 78/133/7-18 and his supplemental report [LBYS0000001] pp. 146/702-147/712.

⁷³ Professor Bisby supplemental report [LBYS0000001] pp. 147/708.

⁷⁴ Professor Bisby supplemental report [LBYS0000001] pp. 147/709. Dr Lane report [BLAS0000008] p. 59 Fig. 8.65.

⁷⁵ Professor Bisby supplemental report [LBYS0000001] p. 147 section 710.

22.31 However, Professor Bisby was at pains to emphasise that, in his view, flame also spread almost simultaneously through the open window to impinge on the ACM cassette immediately above and that a combination of the two routes was most likely to have led to the ignition of the cladding and the escalation of the fire up the building.⁷⁶ That is consistent with the video evidence showing flames coming out of the building in the vicinity of the small left-hand window and extractor fan panel, together with melting and dripping polyethylene, which at around 01.11.45 can be seen burning to the left on the top of the ACM cassettes immediately below the window.⁷⁷ Professor Bisby was of the view that this burning polyethylene, “a bright spot on the spandrel panel below”, as shown in the images at 01.11, indicated a significant exposure to flame of the ACM spandrel cassettes above the window and explained why polyethylene was burning in that way at that particular location.⁷⁸

3 Dr Barbara Lane

22.32 Dr Lane also addressed this topic in her oral evidence to the Inquiry. She was also of the view that the most likely route of flame spread out of Flat 16 and into the cladding was through the side of the window following the deformation of the uPVC window surrounds and into the column cavity. She emphasised, by reference to the diagram reproduced below and the thermal images taken by the firefighters inside the kitchen, the proximity of the gap⁷⁹ between the window surrounds and the column. Given the known propensity of uPVC to lose its stiffness at relatively low temperatures and the absence of mechanical fixings, she was of the view that there must have been a substantial transfer of heat to the top corner of the window adjacent to the column. In her opinion, by the time flames could be seen from the outside, it was likely that there had already been a significant transfer of heat into the cavity around the column.⁸⁰

⁷⁶ Professor Bisby oral evidence Day 78/133/1-135/2 and his supplemental report [LBYS0000001] p. 147 section 713.

⁷⁷ Professor Bisby supplemental report [LBYS0000001] p. 145 section 692 and p. 122 Fig. 65, and his oral evidence Day 78/112/7-113/5, 130/2-8, 133/19-134/1.

⁷⁸ Professor Bisby oral evidence Day 78/129/20-130/8.

⁷⁹ As set out in Chapter 6 of this report, that gap varied on site between 30mm and 130mm.

⁸⁰ Dr Lane oral evidence Day 79/158/10-161/22.

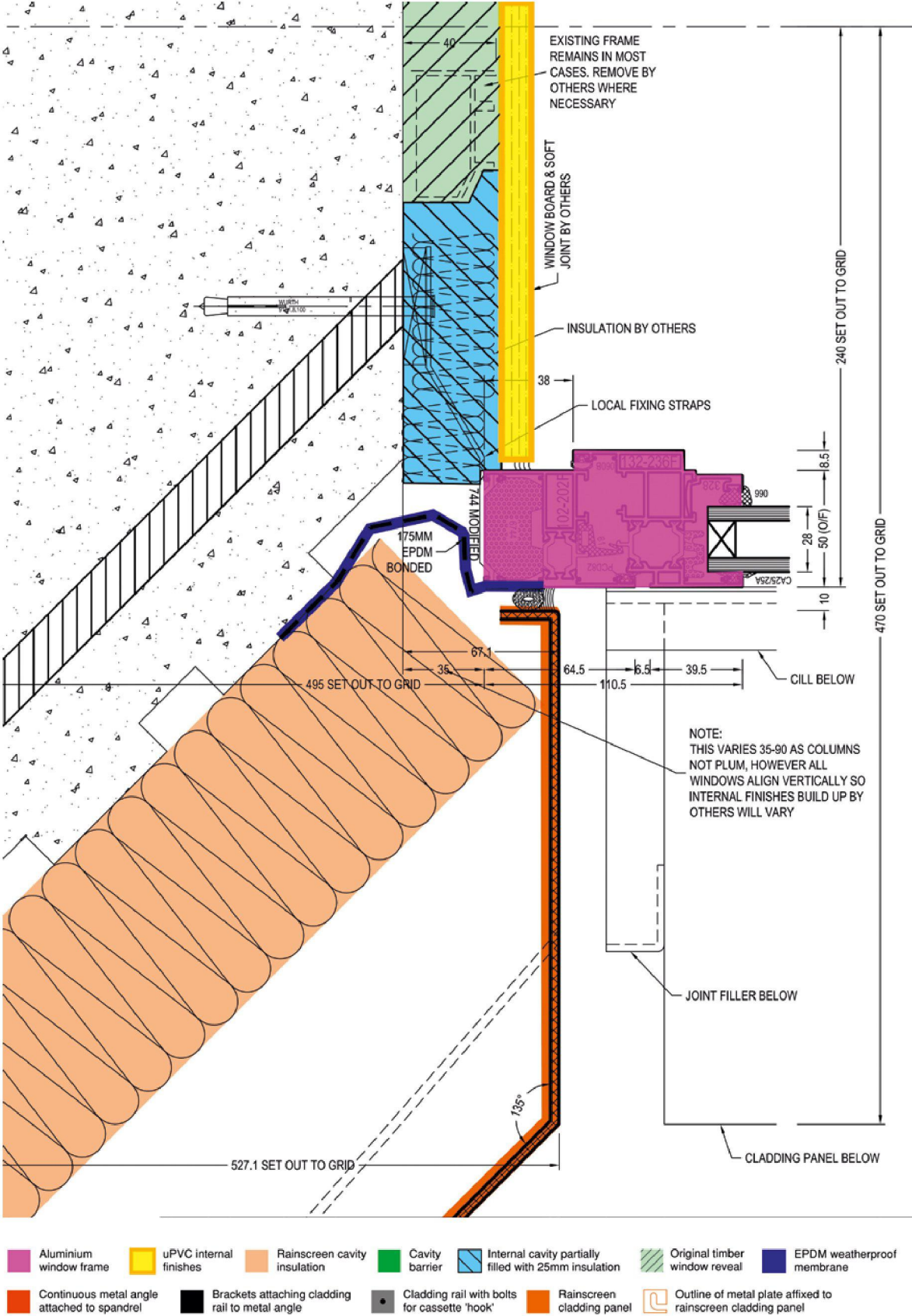


Figure 22.17

4 Other evidence

- 22.33 Tiago Alves, a resident of the tower, who escaped from the building with his parents and his sister at around 01.05, saw the fire as it was breaking out of Flat 16. His evidence is consistent with the video evidence summarised above. In paragraphs 37-38 of his witness statement he said:

“I was standing on the grass area and could see smoke coming out of the 4th floor flat. There was a fire inside which I could see behind the window. Then the frame fell out and suddenly I could see smoke and the fire burst out... The window frame looked like it was melting and bubbling but didn’t look like it was on fire. I could tell it was cheap grade plastic. As I watched the window fall out of the flat, fire was coming out of the open window...

I stood just looking up at Flat 16. The window frame had fallen out so it had created a gap between where the frame used to be and the outside cladding material. What I could clearly see was the fire “rolling under” the cladding. The fire would come out of the flat and kind of roll under or slightly disappear under the grey cladding. As it did this the cladding caught fire. I could see that fire was escaping into the cavity between the insulation and what I thought was aluminium cladding.”⁸¹

- 22.34 A number of firefighters and other local people also gave evidence about the early development of the fire. However, although their accounts provide helpful background to the mechanisms by which the fire progressed, none are particularly instructive in terms of determining the precise means by which the fire broke out of the kitchen and into the cladding.
- 22.35 It is clear from the available video evidence taken outside the tower that the fire had entered the cladding some time before 01.14.06 when FF Daniel Brown and CM Charles Batterbee first opened the kitchen door in Flat 16 at 01.14.06, as shown in the available thermal imaging camera (TIC) footage.⁸² In those circumstances, Professors Torero and Bisby were both of the view that the evidence from the firefighters about what they saw in the kitchen of Flat 16 (including the TIC images they took) was of little assistance in determining how the fire had escaped from the kitchen.⁸³

5 Conclusions

- 22.36 Despite approaching this question from different perspectives, the experts agreed that the fire probably escaped from the kitchen of Flat 16 into the cladding in one or other of the two ways described by Professor Bisby, and that of those the more likely is that the deformation and collapse of the uPVC window jamb enabled it to bypass the window and enter the cavity around the column. Although they reached their conclusions by different processes of reasoning, it is striking that they have reached the same conclusions. It is also important to bear in mind that no one has sought to place before me evidence from any other expert witness that might contradict their evidence or in any way undermine their conclusions.
- 22.37 The windows of Flat 16, including the surrounds and insulation board attached to them, were destroyed in the fire, but there is no reason to think that either the materials themselves or the method of fixing the window surrounds in Flat 16 were different in any significant respect from those to be found in other flats. I have no difficulty in accepting that uPVC loses its stiffness entirely at a relatively low temperature, causing it to deform under the influence of gravity unless fixed in place by some means. Examples of this behaviour can be seen in the photographs in paragraph 9 taken inside some less seriously damaged flats.

⁸¹ [IWS00000123].

⁸² [MET00005814].

⁸³ Professor Torero oral evidence Day 77/71/25-72/21; Professor Bisby oral evidence Day 78/141/10-142/14.

- 22.38 The evidence indicates that the window jambs were fixed with adhesive to the original timber window jambs over part of their depth and to insulation board over the remainder. No mechanical fixings were used. In those circumstances I think that it is more probable than not that the uPVC window jamb nearer the fridge-freezer deformed at an early stage as the result of the impingement of hot smoke. As it deformed it fell away from the old timber jamb carrying with it the insulation board to which it was still attached by adhesive. The result was to provide a means for the fire to gain access to the cavity between the insulation and the ACM panels, having overcome the insignificant resistance of the EPDM membrane.
- 22.39 In my view that mechanism is more consistent with the earliest video evidence, which shows polyethylene melting and dripping from the bottom left-hand corner of the window at 01.09. It is also consistent with the sides of the window (including the exposed polyethylene at the point where the column panels meet the window⁸⁴) having become involved in the fire by that stage, although it is not possible to be certain where that polyethylene came from. The video evidence does show flames coming out of the window and impinging on the ACM panels directly above, so it is possible that the mechanism described in Professor Bisby's Hypothesis B2 also played a significant role. Ultimately, however, that is of little significance, because in both cases it was the proximity of combustible materials to the interior of the compartment that allowed the fire to spread. I agree with Professor Torero that it is not realistic or helpful to seek to determine the precise sequence in which the materials ignited or burned. What really matters is that the design of the refurbishment, the choice of materials and the manner of construction allowed an ordinary kitchen fire to escape into the cladding with disastrous consequences.
- 22.40 How this state of affairs came about is for investigation in Phase 2, but at this stage I accept the evidence of all three experts that, if a fire started near a window, there was a disproportionately high chance of its spreading into the cladding, given the configuration and materials of the windows and of exterior cladding. In the view of Professor Torero it was almost certain, if not inevitable, that a kitchen fire of the magnitude he had postulated would occur in a building of this nature at some point in its lifetime and that such an occurrence was perfectly foreseeable.⁸⁵ Dr Lane expressed the view that the construction detailing around the windows, including the materials and their arrangement, increased the risk of a fire within the flat breaking out into the large cavities surrounding the windows.⁸⁶ She also emphasised that the windows were not provided with any fire-resisting cavity barriers and instead were surrounded by combustible materials, including the linings above and below the windows made of Purlboard. In her view, if a fire started near a window, there was a disproportionately high probability that it would spread into the cladding regardless of how it had started.⁸⁷ Finally, Professor Bisby accepted that the majority of materials around the window had very little capacity to resist a fire and that it was likely that a fire anywhere near a window would break out of the flat and into the cladding.⁸⁸

6 Postscript

- 22.41 After I had drafted this chapter, I received from the MPS at the end of June a report dated 24 May 2019 prepared by the BRE containing its description and analysis of a large scale reconstruction of the fire in Flat 16, Grenfell Tower and the conclusions it had drawn from

⁸⁴ As shown in Dr Lane's Fig. 8.65 [BLAS0000008] p. 59.

⁸⁵ Professor Torero oral evidence Day 77/97/13-98/1 and his supplemental report [JTOS0000001] p. 55 lines 1563-1567.

⁸⁶ Analysis of the potential fire spread routes through the window openings at Chapter 9 of her report [BLAS0000009] pp. 1-49 and, in particular, her conclusions at 9.6-9.7 pp. 48-49.

⁸⁷ Dr Lane supplemental report [BLAS0000002] 2.9.10-2.9.14 and [BLAS0000009] p. 48 9.7.1-9.7.7.

⁸⁸ Professor Bisby oral evidence Day 78/105/15-106/8.

it. The reconstruction sought to reproduce as accurately as possible the configuration and contents of Flat 16 immediately before the fire and two storeys of the facade above, including the cladding. Basing itself solely on the results of that reconstruction, the BRE reached the following conclusion:

“It appears from the reconstruction most likely that fire spread to the cladding via the extractor fan and infill panel into which it was mounted, and then ignition of the exposed edge of the polyethylene core of the ACM. The second most likely route evidenced by the reconstruction, and one which could have occurred if the polyethylene had not been the cladding component first ignited, is the route via the construction around the window (through the uPVC, insulation and gap between window frame and column).” (p. 3)

- 22.42 Without access to the whole of the information obtained from the reconstruction it is not possible to determine whether the test itself and the conclusions drawn from it have a bearing on the questions addressed in this Chapter. However, if that information can be made available, I shall ask Professor Torero and Professor Bisby to prepare short reports explaining whether it causes them to alter or refine the evidence they gave at Phase 1. I am also willing to receive submissions from core participants on the relevance of the reconstruction and the conclusions drawn from it at some convenient time during Phase 2. In those circumstances, the findings made in this Chapter remain provisional and I will express a final view in the Phase 2 report.

Chapter 23

The Subsequent Development of the Fire

- 23.1 Once the fire had escaped from the compartment of origin, it spread rapidly up the east face of the tower. It then spread around the top of the building in opposite directions and down the sides of the building until the advancing flame fronts converged on the west face near the south-west corner. The vertical spread of flame up the east elevation marked the first phase of the fire's development and was generally consistent with the way in which a fire of this kind might be expected to behave. The spread of fire horizontally and downward, however, was unusual, since other fires of this kind, some of which are mentioned below, have tended to burn out after reaching the top of the building.
- 23.2 Each stage of the fire's development contributed significantly to the ultimate disaster and it is therefore important to understand as clearly as possible the sequence of events by which they occurred and, insofar as is possible at this stage, the mechanisms behind them.

1 Vertical fire spread

- 23.3 Professor Luke Bisby, Professor José Luis Torero and Dr Barbara Lane all covered the subject of vertical fire spread in their written and oral evidence. They examined the available photographic and video evidence from the night of the fire in order to understand the way in which the external flame front had progressed. Professor Bisby, who took a leading role in analysing that evidence, produced a compilation of video recordings from various sources which highlights, in powerful terms, the rapid spread of flame vertically up the east face of the building in the first few minutes of the fire.¹ Professor Torero and Dr Lane also addressed this topic in some detail in their reports. Again, although the experts approached their task from different perspectives, there was considerable agreement between them, particularly as to the mechanisms by which the flames were able to reach the top of the tower so quickly.

Professor Bisby

- 23.4 In Professor Bisby's opinion the most important factor by a considerable margin in the rapid spread of fire vertically (and the spread of fire across the exterior of the building more generally) was the presence of ACM panels with a polyethylene core. In his view the evidence strongly supported that conclusion and in reaching it he emphasised the characteristics of polyethylene, including its high calorific value (when compared with other common construction materials, including those used at Grenfell Tower), providing an ideal fuel source for a growing fire.² It is a highly flammable synthetic thermoplastic polymer which has a heat of combustion similar to that of petrol or diesel fuel.³
- 23.5 He also identified a number of other factors which in his view had contributed to the vertical flame spread, namely, the presence of combustible PIR and phenolic insulation, the presence of continuous vertical channels and internal cavities in the cladding system and the specific

¹ [LBYS0000002]. As explained in Professor Bisby's report [LBYS0000001] pp. 154/774, a total of 40 videos have been considered as part of this analysis.

² Professor Bisby supplemental report [LBYS0000001] pp. 178/859-860.

³ Professor Bisby expert presentation Day 7/67/15-68/13.

geometry of the tower, including its protruding column “wing walls”.⁴ Although he emphasised that the precise contributions of these different elements could not be quantified at this stage (and indeed might never be capable of quantification due to the complexity of the relationship between them), he was clear that all of them were likely to have contributed to the rate at which, and the extent to which, the fire spread vertically.⁵

- 23.6 Professor Bisby drew attention to two particular mechanisms by which the PIR and phenolic insulation behind the ACM panels might have contributed to the scale of the fire. The first was by pyrolysing⁶ and releasing combustible products, which ignited and thereby contributed to an increase in the overall local heat release rate.⁷ The second was by radiating heat back at the ACM panels, effectively insulating the cladding compartment, thus retaining heat in the system and contributing to the rate of heating of other combustible materials present.⁸ The latter was in his view a potential consequence of the low thermal inertia of both PIR and phenolic insulation boards, as a result of which their surface temperature rises very quickly when exposed to heat.
- 23.7 Professor Bisby drew attention to the number of exposed edges of insulation boards within the cladding system which were not covered with a foil facing, unlike the two main faces. Given the inherent combustibility and low thermal inertia of the materials, he considered that these exposed surfaces could be expected to spread flame in the presence of external heating. Although Professor Bisby noted that no obvious increase in the rate or extent of flaming had been apparent where PIR insulation had been present in tests carried out by the Department for Communities and Local Government during the weeks after the fire, he identified some important differences between the materials used in those tests and the materials that had been used in the work on the tower, including (in the case of the test materials) more extensive use of foil facings and foil tape.⁹ In oral evidence he said that in his view those tests had been of no utility other than to demonstrate that ACM panels with a polyethylene core cause the vertical spread of flame to escalate very quickly.¹⁰
- 23.8 He also concluded that the presence of continuous vertical channels and extensive internal cavities was “almost certain” to have contributed to the rate and extent of vertical flame spread.¹¹ He drew attention, in particular, to two key locations at the columns, the column tips¹² and the sides of the columns where vertical channels and extensive vertical cavities were present, and to the well-recognised phenomenon of flames elongating five to 10 times when confined in a vertical channel or cavity.¹³ The available video evidence also shows fire spread at 01.13 extending up the cavity behind the vertex between the columns and spandrels and the most rapid fire spread up column B5. He also considered that it was “very

⁴ Professor Bisby discounted a further hypothesis (C4) that the prevailing wind at the time may have played a role not least given the available Met Office data which shows low velocities of wind on the night when compared with the upward velocity of the buoyant plume: supplemental report [LBYS0000001] pp. 182/898-902.

⁵ Professor Bisby supplemental report [LBYS0000001] pp. 180/880-881, 182/896-897, 183/912 and his oral evidence Day 78/168/25-169/8.

⁶ As explained at section 2.2 of Professor Bisby’s supplemental report, pyrolysis is the process of thermal decomposition of a solid material: [LBYS0000001] pp. 18/110-19/123.

⁷ Professor Bisby supplemental report [LBYS0000001] pp. 179/869 and his oral evidence Day 78/173/18-176/12.

⁸ Professor Bisby supplemental report [LBYS0000001] pp. 179/870 and his oral evidence Day 78/173/18-176/12.

⁹ Professor Bisby supplemental report [LBYS0000001] pp. 180/877-879. He also highlighted that the DCLG tests appeared to have been conducted using riveted ACM panels and not cassette ACM panels as were to be found at Grenfell Tower: Professor Bisby oral evidence Day 78/178/12-179/2 and his supplemental report [LBYS0000001] p. 180, footnote 55.

¹⁰ Professor Bisby oral evidence Day 78/177/3-178/11.

¹¹ Professor Bisby oral evidence Day 78/180/16-181/9 and his supplemental report [LBYS0000001] pp. 180/883-182/897.

¹² As explained by Professor Bisby in his oral evidence Day 78/87/4-18, the cladding rail at the tip of the columns provided a continuous void running all the way from the base of the building to the roof and the cavity barriers were all cut around that u-shaped rail.

¹³ Professor Bisby supplemental report [LBYS0000001] pp. 181/885-886, p. 45 Fig. 18, p. 49 Fig. 22, p. 56 Fig. 28, p. 57 Fig. 29.

likely” that the overall geometry of the building had contributed to the rate and extent of vertical flame spread.¹⁴ More specifically, he drew attention to the protruding column wing wall, which was inclined at 135 degrees to the spandrels.¹⁵ In his view it produces two specific effects. First, the fact that the fire is confined in a corner (even if not a right-angle corner) changes the way that fresh air is entrained into the fire. Because less air is available at its base, the flames elongate in the search for more air to continue burning, thereby increasing the vertical spread of flame. Secondly, the fact that the walls stand at an angle to each other allows heat to be radiated between them, thereby causing the temperature to increase locally.¹⁶

- 23.9 Professor Bisby thought it unlikely that the Aluglaze window infill panels had made any substantial contribution to the spread of flame, because the XPS inside the panels was of low density and the panels made up only a small proportion of the exterior envelope of the tower overall.¹⁷ He also emphasised that when XPS is exposed to heating it tends to shrink away from the heat source and then burn in situ.¹⁸
- 23.10 Professor Bisby agreed with Dr Lane that, if the rainscreen cladding panels could distort when heated, either through heating of the panel itself or as a result of the failure of the supporting fixtures, the space between the cavity barriers and the rainscreen cladding panels would be liable to increase in size, rendering the cavity barriers ineffective.¹⁹ He explained that under a high heat flux, “quite quickly the rainscreen cassettes are deforming or gone or burning and you no longer have a cavity, which defeats the purpose of a cavity barrier”.²⁰ He also agreed with Dr Lane that the cladding rails bypass the cavity barriers and so also provided a route for flame to spread vertically within the system.²¹

Professor Torero

- 23.11 Professor Torero considered the vertical flame spread as part of his analysis of the development of the fire during the period from its breaching the compartment of origin to the approximate time when the flames reached the top of the east face of the building (his stage 2, 01.05-01.30).²² He explained that, in general, the rate of vertical flame spread is at least 10 times faster than that of lateral flame spread and that the larger the burning zone, the faster the rate at which flames will spread vertically. In other words, vertical flame spread accelerates as the fire develops,²³ because all forms of heat transfer, convection, conduction and radiation heat the material ahead of the flame. As a result, not only is there an increase in the heat flux applied to the unburnt surface, but the area being heated itself increases in size, thereby increasing the rate of flame spread. In contrast, lateral flame spread is controlled by radiated heat transfer from the flame to the unburnt material to the side of the flame and the area being heated is more limited because convection carries heat away from the material towards the flame, thereby reducing the size of the pre-heated area.²⁴

¹⁴ Professor Bisby supplemental report [LBYS0000001] pp. 182/903-183/912.

¹⁵ The angle as between the spandrel ACM cladding panels and the column cladding panels.

¹⁶ Professor Bisby oral evidence Day 78/182/11-183/16.

¹⁷ Professor Bisby oral evidence Day 78/29/20-33/6.

¹⁸ Professor Bisby oral evidence Day 78/193/2-194/14.

¹⁹ Professor Bisby oral evidence Day 78/91/13-92/3.

²⁰ Professor Bisby oral evidence Day 78/89/17-90/5.

²¹ Professor Bisby oral evidence Day 78/185/13-19.

²² Professor Torero supplemental report [JTOS0000001] pp. 2/14-15 and footnote 1.

²³ Professor Torero supplemental report [JTOS0000001] pp. 57/1588-1598.

²⁴ Professor Torero supplemental report [JTOS0000001] pp. 58/1610-1621, p. 60 Fig. 22(a)-(b) and his oral evidence Day 77/102/4-104/18.

- 23.12 Professor Torero compared the Grenfell Tower fire with similar fires that have occurred in buildings in other countries. They demonstrate that the most common way in which a fire in the exterior of the building develops is by a flame spreading rapidly upwards with relatively limited lateral spread. This form of fire development occurred at The Torch building in Dubai, the Lacrosse building in Melbourne and The Address building in Dubai,²⁵ as is shown in the following images.²⁶



Figure 23.1

- 23.13 Although, in the view of Professor Torero, there is limited reliable data on the characteristics of these fires, he noted that the available video footage clearly shows that once the fire had spread to the top of each of those buildings it began to decay and eventually died out.²⁷

²⁵ Professor Torero supplemental report [JTOS0000001] pp. 58/1599-1609 and his oral evidence Day 77/104/19-107/20.

²⁶ Professor Torero supplemental report [JTOS0000001] p. 59 Fig. 21 (a)-(f).

²⁷ Professor Torero supplemental report [JTOS0000001] pp. 58/1599-1609.

Considered in the context of these and other international fires, the rate of vertical fire spread at Grenfell Tower was not unusual and, in fact, was one of the slowest reported,²⁸ as is illustrated by the following figure taken from Professor Torero’s report:²⁹

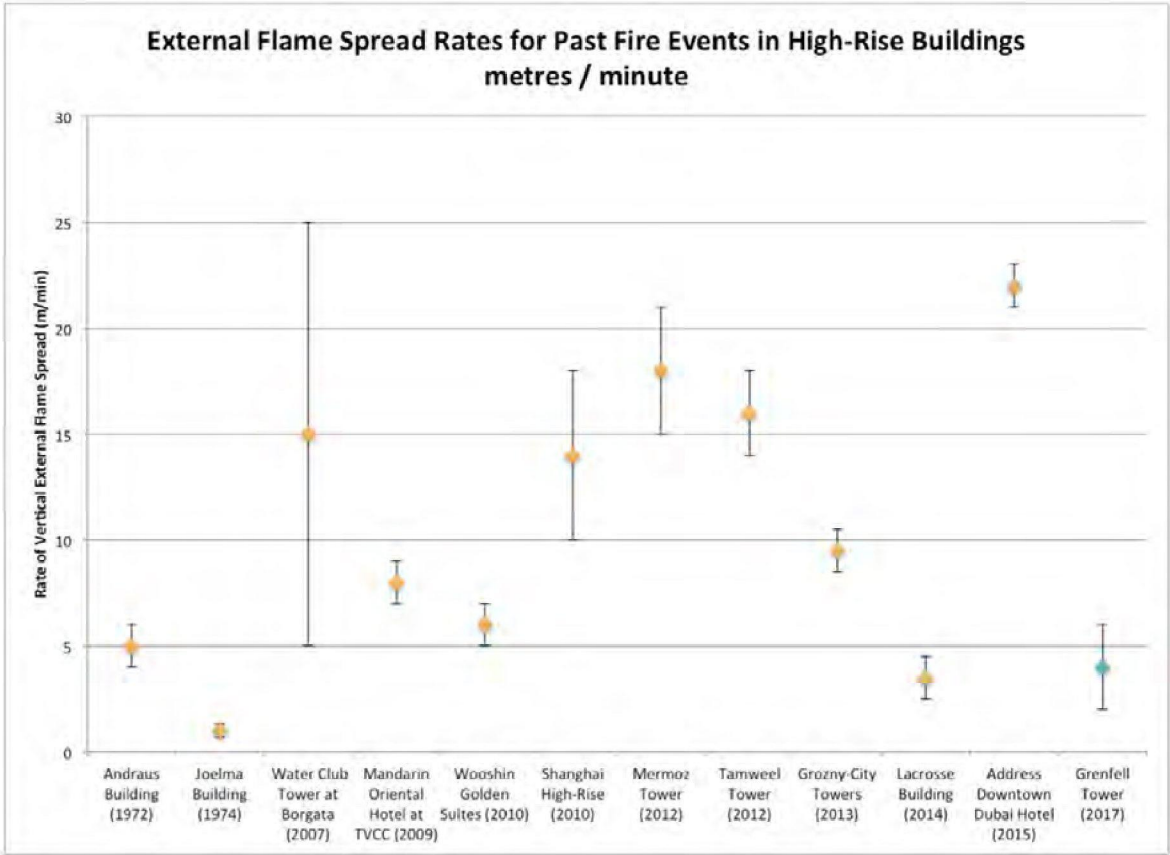


Figure 23.2

- 23.14 As can be seen from that graph, at Grenfell Tower the rate of vertical flame spread was on average about 4 metres a minute, compared with the extreme case of the fire in The Address building in Dubai, which spread at about 22 metres per minute.³⁰
- 23.15 Professor Torero explained that the presence of combustible materials in the cladding system, including the polyethylene core of the rainscreen panels, the PIR insulation and the EPDM membrane,³¹ would have sustained combustion of a kind that promoted vertical flame spread. In the presence of significant flame the aluminium plates forming the outer skin of the ACM cassette panels would melt and would provide no protection to the polyethylene core. The temperature of a flame is typically between 600-800°C, which is higher than the melting point of aluminium (580-650°C). Polyethylene melts at a much lower temperature and will therefore melt and drip both before and after it has been ignited. PIR insulation will char and remain in place. In the absence of significant heating it will generally stop burning, leaving a large proportion of its mass as residue.³² Having examined photographs of the tower taken

²⁸ Professor Torero supplemental report [JTOS0000001] pp. 58/1622-1627.
²⁹ Professor Torero supplemental report [JTOS0000001] p. 61 Fig. 23.
³⁰ Professor Torero oral evidence Day 77/107/4-108/1.
³¹ In terms of the EPDM membrane refer to his oral evidence Day 77/136/19-137/11.
³² Professor Torero supplemental report [JTOS0000001] pp. 60/1645-61/1658.

after the fire, Professor Torero concluded that different areas had been exposed to different levels of heating: some had been exposed to intense local heating and others to only mild local heating.³³

- 23.16 Professor Torero emphasised that the extremely complex characteristics of the cladding system made it difficult to identify the extent to which different parts had contributed to the vertical spread of flame. For example, although he was confident that the width of the cavities and the geometry of the column detailing had played a role, he was unable to say whether they had promoted or restricted the spread of flame.³⁴ He explained that although extensive studies had been carried out on the spread of flame across flat plates, both vertical and horizontal, less attention has been paid to the width of the cavity, which plays a fundamental role in the rate of flame spread in any system of that kind. In simple terms, if the width of the cavity exceeds a critical size, radiative feedback and buoyantly driven “chimney” effects (the upward movement of hot air in an enclosed vertical space) disappear altogether. If the width of the cavity falls below a critical size, thermal expansion of the gases blocks their flow and the flames cease to spread internally.³⁵ At Grenfell Tower the accelerated vertical flame spread could be explained by the presence of open vertical channels, which induced chimney effects associated with their width, and also by the fact that polyethylene burns more easily than PIR insulation based on their material properties.³⁶ However, given the relatively slow rate of vertical flame spread at Grenfell Tower by comparison with other international fires, he concluded that the specific detailing of the cladding system had probably had only a minor effect on the evolution of the fire and that the important factor in the rate and extent of flame spread was the composition of the materials used in it.³⁷ A simplified illustration of the different processes which may have occurred during the spread of flame over a version of the cladding system used at Grenfell Tower is shown below.³⁸

³³ Professor Torero supplemental report [JTOS0000001] pp. 61/1668-62/1677.

³⁴ Professor Torero supplemental report [JTOS0000001] pp. 4/91-95 and his oral evidence Day 77/114/15-119/5 and the discussion about cladding rails penetrating cavity barriers at Day 77/142/22-144/1.

³⁵ Professor Torero oral evidence Day 77/113/1-114/13.

³⁶ Professor Torero supplemental report [JTOS0000001] pp. 63/1695-1709.

³⁷ Professor Torero oral evidence Day 77/118/2-119/18.

³⁸ Professor Torero supplemental report [JTOS0000001] p. 63 Fig. 26.

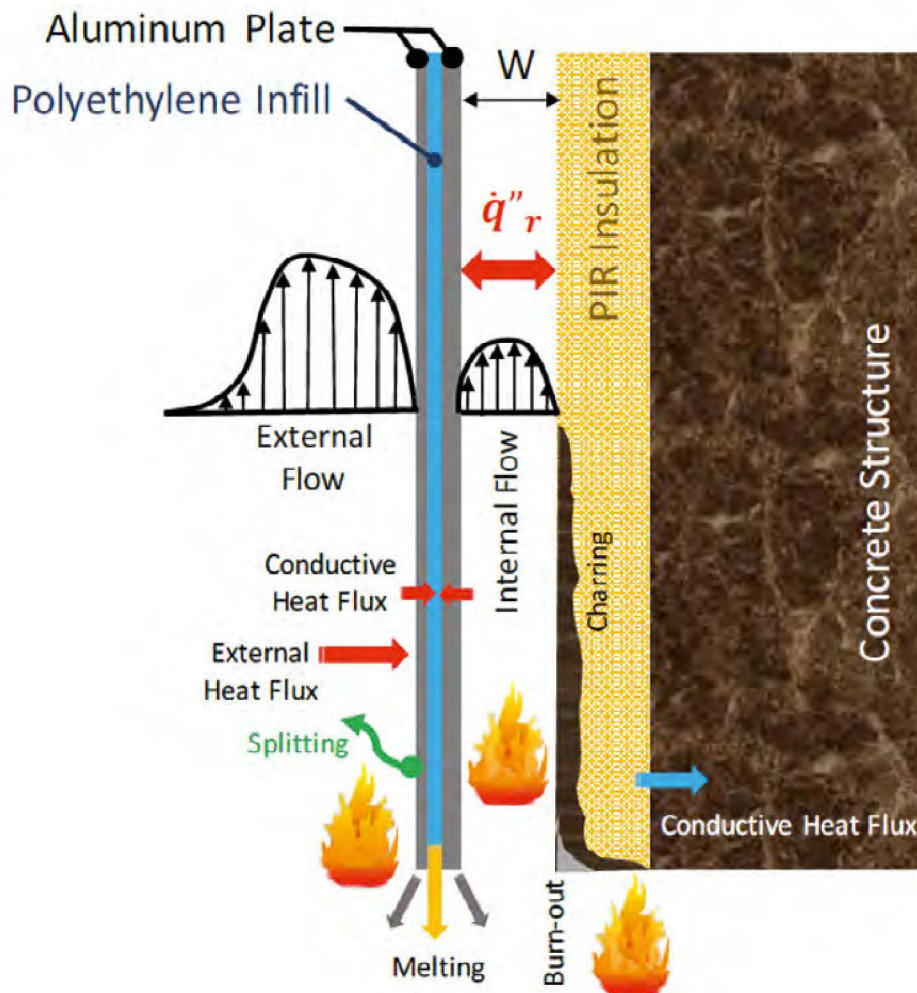


Figure 23.3

- 23.17 Professor Torero explained that, in a system of this complexity, a large number of different processes come into play in addition to the width of the cavity. For example, the low melting temperature and high thermal conductivity of aluminium results in complex heat transfer from external flames into the polyethylene core. The polyethylene melts as it is heated and the rate of melting is influenced by how fast the heat travels through the aluminium, which itself can be influenced by a variety of different factors.³⁹ In addition, differential deformation of the aluminium plates can occur, leading to splitting of the plates and exposure of the polyethylene.⁴⁰
- 23.18 Inside the cavity, the PIR has a low thermal inertia, which favours rapid initial flame spread, but its propensity to char reduces the amount of fuel that is consumed and thus has a retarding effect on flame spread. The outcome of these two competing effects is determined by radiative feedback from the ACM panels to the insulation boards, because if the insulation is exposed to additional heat it will continue to burn. Thus, the way the ACM panels burn has an effect on the way in which the PIR will spread a flame. Conversely, the way in which the PIR burns has an effect on the rate at which the ACM panels degrade, allowing the polyethylene core to melt and burn. Faster degradation induces more rapid melting of the polyethylene, which may reduce the rate at which the flame spreads but will increase the rate at which molten debris falls with the potential to ignite further fires. During his oral evidence Professor

³⁹ Professor Torero oral evidence Day 77/111/2-25.

⁴⁰ Professor Torero supplemental report [JTOS0000001] pp. 64/1716-1721.

Torero made it clear that, although the precise nature of the interaction between the two components was unclear at this stage, he was of the view that the insulation had contributed to the external flame spread. However, he found it difficult to say whether its contribution had been of considerable or only minor significance. As he explained, “clearly there is burning of the PIR and there is evidence that it had been contributing to the energy that is being released”, but he was unable to quantify that contribution at this stage.⁴¹

- 23.19 Professor Torero was of the view that the Aluglaze window infill panels might have contributed to the total heat release rate during the fire and therefore to the vertical flame spread, but he emphasised that XPS is a low density material, the mass of which present in the cladding system was much smaller than that of the other materials. Any contribution it may have made was therefore likely to have been minor.⁴²
- 23.20 Professor Torero was asked about the effectiveness of cavity barriers in a fire of this kind. He was of the opinion that, in circumstances where the flames could be seen taking hold of the outside of the ACM panels from the very early stages of the fire, the rate of vertical flame spread was unlikely to have been significantly affected by defects in the way they were sited or fitted.⁴³ He pointed out that the use of a barrier to prevent flame spreading through a cavity would be ineffective if there were combustible materials on either side of the barrier itself which effectively allowed the fire to spread around it. He also pointed out that, if ACM panels deform, delaminate or become detached from the building, cavity barriers will not be effective.⁴⁴

Dr Lane

- 23.21 Dr Lane agreed with Professor Bisby and Professor Torero that the ACM panels had contributed to the rapid fire spread, given the polyethylene core of those panels and its particular properties.⁴⁵ She also agreed with them that the insulation played a role in terms of the speed and extent of flame spread. In particular, she emphasised that the insulation in the cavity behind the ACM rainscreen panels would produce pyrolysing material and gases, thereby creating a highly effective environment for flaming combustion.⁴⁶
- 23.22 Based on a review of the photographic evidence, she identified a number of separate pathways by which flames were able to spread across the cladding system. Her assessment was that the columns were the principal route for vertical flame spread during the early stages of the fire.⁴⁷ In particular, she relied on the fact that the cladding around the columns contained a number of combustible materials, including the core of the ACM panels, the PIR insulation and the EPDM membrane.⁴⁸ She also drew attention to the fact that the panels on the columns were ventilated by means of gaps between them which allowed a flow of air into the cavity running the full height of the columns. Those gaps provided a continuous flow of oxygen capable of fuelling the fire.⁴⁹

⁴¹ Professor Torero oral evidence Day 77/121/11-127/23.

⁴² Professor Torero oral evidence Day 77/131/10-136/18.

⁴³ Professor Torero supplemental report [JTOS0000001] pp. 69/1950-70/1953.

⁴⁴ Professor Torero oral evidence Day 77/138/19-140/15.

⁴⁵ Dr Lane supplemental report [BLAS0000002] p. 16/2.9.20; [BLAS0000010] p. 11/10.3.9 and her oral evidence Day 79/100/7-11.

⁴⁶ Dr Lane oral evidence Day 79/97/12-99/12.

⁴⁷ Dr Lane supplemental report [BLAS0000010] p. 9/10.3.1-24/10.3.44 and her oral evidence Day 79/61/9-62/24.

⁴⁸ Dr Lane supplemental report [BLAS0000010] p. 11/10.3.9-14/10.3.16.

⁴⁹ Dr Lane supplemental report [BLAS0000010] p. 14/10.3.16-15/10.3.26.

- 23.23 Dr Lane drew attention to other features of the cladding system which, in her opinion, also played a role in promoting the vertical spread of flame. In that regard she identified both the vertical cavities created by the cladding rails at the tips and edges of the columns⁵⁰ and the Aluglaze window infill panels.⁵¹ However, although she thought they had played some role, in her view they had not been a significant or governing factor.⁵² Dr Lane emphasised that the Aluglaze panels had made up only 15-17% of the overall surface area of the tower⁵³ and therefore were not a dominant feature, but the XPS core was combustible and in her view there was some visual evidence to suggest that they may have been a mechanism by which flame spread during the fire.⁵⁴
- 23.24 Dr Lane expressed the opinion that the use of cavity barriers in cladding systems was “entirely problematic”, in essence because a cavity barrier cannot prevent a flame from propagating in a cavity if the surface of the wall itself is burning.⁵⁵ She illustrated that by reference to a number of diagrams showing routes by which cavity barriers can be bypassed in a system of the kind installed at Grenfell Tower. They include flaming through the polyethylene core itself and the widening of the gap between the cavity barrier and the external surface as a result of the distortion of the panels.⁵⁶ Her view was that it made no difference where the cavity barriers had been placed in the cladding at Grenfell Tower, because they had been installed in a system which used ACM panels with a polymeric core.⁵⁷ Although there were defects in the way in which the cavity barriers had been installed, including examples of poor workmanship and the installation of horizontal cavity barriers in the vertical position, she considered them to be minor defects, which were eclipsed by the more fundamental problem that the barriers became ineffective once the flames had taken hold of the ACM panels themselves.⁵⁸

2 Horizontal and downward fire spread

- 23.25 After the fire reached the highest point at the top of the east face of Grenfell Tower at approximately 01.29, it advanced north and south and wrapped itself around the building in two advancing flame fronts, before converging on the west face in just over two and a half hours at around 04.08. That rapid horizontal and downwards spread of flame was a unique feature of this particular fire, which sets it apart from many other international fires and is an important factor in making the outcome so devastating in terms of the loss of human life. In this Chapter I examine the expert evidence about the causes of the lateral and downward fire spread, noting again the considerable agreement between the experts about the primary factors which played a central role in enabling that to occur.

Professor Bisby

- 23.26 In Professor Bisby’s opinion the architectural crown of the building played an important role in increasing the rate and extent of horizontal spread of fire around the building.⁵⁹ He referred to extensive video evidence from the night of the fire showing that the most rapid fire spread was invariably at the location of the crown, which acted “like a linear fuse moving around the

⁵⁰ Dr Lane oral evidence Day 79/64/3-22.

⁵¹ Dr Lane oral evidence Day 79/83/5-87/10.

⁵² Dr Lane oral evidence Day 79/64/9-22, 87/4-10.

⁵³ Dr Lane oral evidence Day 79/79/19-22, 87/4-10.

⁵⁴ Dr Lane supplemental report [BLAS0000010] p. 39/10.7.1-41/10.7.8 and evidence Day 79/85/19-86/23.

⁵⁵ Dr Lane oral evidence Day 79/142/8-143/15.

⁵⁶ Dr Lane supplemental report [BLAS0000010] p. 16/10.3.27-23/10.3.44, in particular Figs. 10.18-10.20 and oral evidence Day 79/143/16-144/17.

⁵⁷ Dr Lane oral evidence Day 79/144/23-145/1.

⁵⁸ Dr Lane oral evidence Day 79/147/20-152/14 and her supplemental report [BLAS0000002] p. 15/2.9.11.

⁵⁹ Professor Bisby supplemental report [LBYS0000001 pp. 241/1139-242/1146.

top of the building”.⁶⁰ In his view the elements of the crown, in particular the tall ACM fins at the top of the building, had been most susceptible to burning, dripping polyethylene onto the aluminium coping directly below⁶¹ and producing localised pool fires, which in turn ignited adjacent elements of the crown, allowing the fire to progress laterally around the building.⁶² He also drew attention to certain features of the crown which were likely to have played a role in facilitating the rapid progression of fire, including:

- a. the configuration and orientation of the C-shaped fins themselves as a semi-continuous path for fire to spread;
- b. the number of exposed ACM edges of polyethylene within the fins; and
- c. the fact that the fins themselves formed C-shaped chimneys, supporting flame extension and the spread of fire.^{63,64}

23.27 Professor Bisby did not accept that the lateral progression of the fire around the top of the building could be explained simply by the propensity of flames to broaden out as they extended vertically. He believed that the crown was the dominant factor driving that lateral fire spread.⁶⁵

23.28 He also concluded that the ACM cassettes and the presence of polyethylene within the panels was the dominant and decisive factor in facilitating downward fire spread. In his view there was strong evidence that the polyethylene within the cassettes had enabled the fire to spread downwards and across the building as a result of the polyethylene melting and dripping and collecting on lower surfaces, before forming localised fires which then progressed back up the building.⁶⁶ That was particularly evident from the thermal images taken by the NPAS helicopter, which showed a “waterfall of molten, burning material falling off the side of the building”.⁶⁷ He drew particular attention to the columns, where downward fire spread was very evident and where the pools of burning polyethylene could be seen accumulating at intervals down the columns on the cassette returns or the cavity barriers, before developing into localised pool fires which then spread sideways.⁶⁸ It was also evident from photographs taken after the fire that debonding of the ACM panels had occurred as the flame front progressed downwards, together with a significant accumulation of polyethylene on horizontal surfaces below the fire front (e.g. below window ledges and window infill panels, on the top of ACM cassettes).⁶⁹ The following photographs illustrate that:⁷⁰

⁶⁰ Professor Bisby oral evidence Day 78/197/17-198/4, 200/7-9.

⁶¹ This aluminium coping sat at the top of the building, below the crown: Dr Lane supplemental report [BLAS0000010] p. 48 Fig. 10.47.

⁶² Professor Bisby oral evidence Day 78/199/8-200/9 and his supplemental report [LBYS0000001] pp. 241/1145.

⁶³ Professor Bisby supplemental report [LBYS0000001] pp. 241/1142-1143.

⁶⁴ He also drew attention to the lack of any cavity barriers within the ACM cassettes at the tops of the columns: Professor Bisby supplemental report [LBYS0000001] pp. 241/1144.

⁶⁵ Professor Bisby oral evidence Day 78/200/4-201/24.

⁶⁶ Professor Bisby supplemental report [LBYS0000001] pp. 189/921-192/925, 198/948-949.

⁶⁷ Professor Bisby oral evidence Day 78/192/5-8.

⁶⁸ Professor Bisby oral evidence Day 78/186/14-189/5.

⁶⁹ Professor Bisby supplemental report [LBYS0000001] pp. 193/933-196/935, 194-196 Figs. 115-119.

⁷⁰ Professor Bisby supplemental report [LBYS0000001] pp. 194-195 Figs. 116-118.

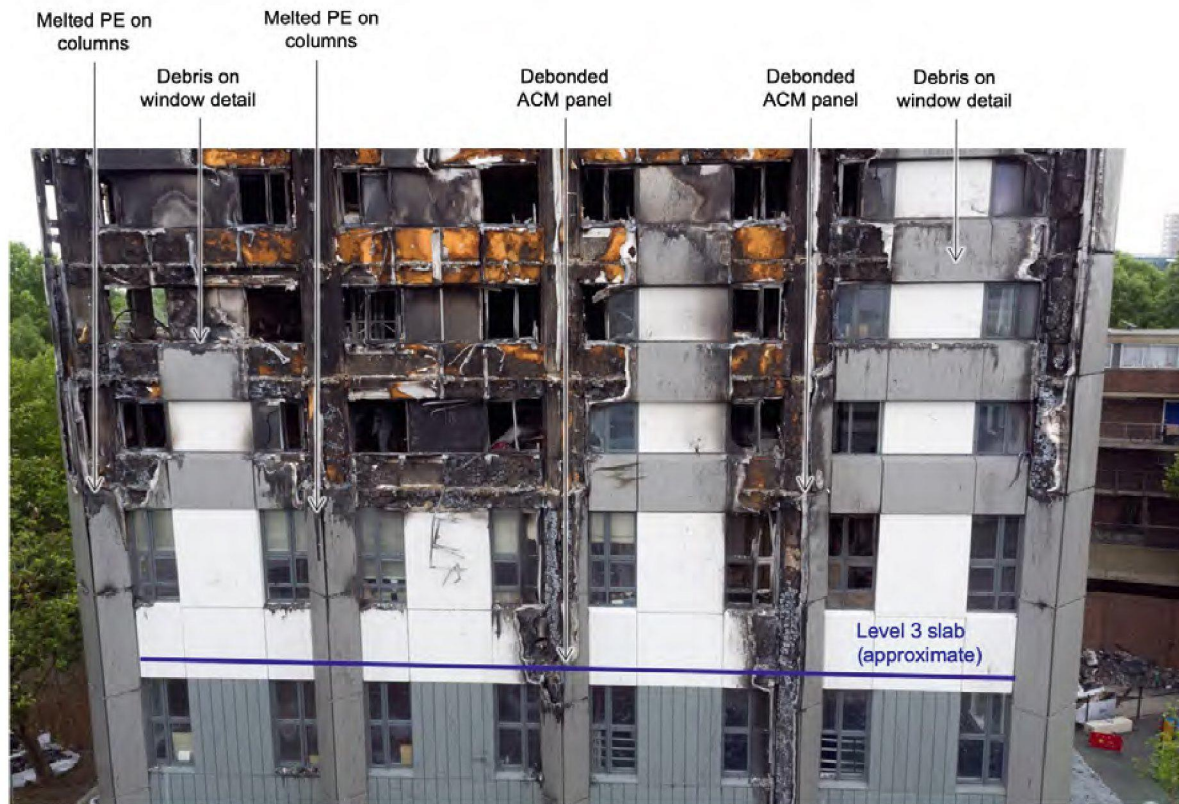


Figure 23.4



Figure 23.5



Figure 23.6

- 23.29 Professor Bisby considered that photographs taken after the fire, particularly of the lower parts of the building, also supported the conclusion that polyethylene had flowed downwards over the external surfaces of the columns and along the extensive vertical channels within those columns, including at the column tips.⁷¹ That was consistent with a number of photographs taken on the night, in which it is possible to see that downward vertical flame spread had occurred first at the column lines, including the column tips and at the vertices between the columns and the spandrels, i.e. at places where there were extensive vertical cavities inside the cladding.⁷² After the fire significant quantities of solidified polyethylene were discovered in these cavities lower down the building, which Professor Bisby thought was compelling evidence that those extensive channels had played a role in facilitating downward flame spread.⁷³ He concluded that the continuous vertical channels and cavities within the columns had played a role in the downward spread of the fire, which would have been much slower if they had not been present.⁷⁴
- 23.30 In Professor Bisby's opinion, the advanced fire spread at the crown and the melting and dripping polyethylene from the crown and from the ACM cassettes at the upper levels of the building had been responsible for the diagonal flame effect which could be seen on all the faces of the tower as the fire progressed between 01.29 and 04.08.⁷⁵ In his written report he explained that this horizontal line moving across the building was generally steeper over the column sections and shallower over the spandrel sections, possibly due to an acceleration of the downward fire spread at the column lines caused both by the presence of uninterrupted bands of polyethylene present in the columns and by the extensive vertical cavities and channels in those locations.⁷⁶

⁷¹ Professor Bisby supplemental report [LBYS0000001] pp. 193/932.

⁷² Professor Bisby supplemental report [LBYS0000001] pp. 185/920, 189/923-924.

⁷³ Professor Bisby oral evidence Day 78/195/8-23.

⁷⁴ Professor Bisby supplemental report [LBYS0000001] pp. 200/959-962 and his oral evidence Day 78/195/8-195/23.

⁷⁵ Professor Bisby supplemental report [LBYS0000001] pp. 235/1084-237/1111 and his oral evidence Day 78/201/1-202/12.

⁷⁶ Professor Bisby supplemental report [LBYS0000001] pp. 239/1124.

- 23.31 Although horizontal flame spread was also likely to have occurred as a result of flames progressing sideways across the ACM panels themselves (known as “opposed flow”), Professor Bisby was clear that it was the melting and dripping polyethylene and the resulting progression of the fire diagonally across the building which was the predominant cause of lateral flame spread.⁷⁷
- 23.32 Professor Bisby thought that the insulation was likely to have played a minor (but as yet unquantified) role in exacerbating the melting and dripping of polyethylene, because it would have insulated the cladding cavity, thereby increasing the interior temperature.⁷⁸ Similarly, although the insulation could have contributed to the lateral flame spread, particularly at the exposed edges of the insulation boards, he did not think it was possible to quantify that contribution at this stage. Any such contribution would have to occur by way of opposed flow, which would probably have required significant heating to cause flames to progress horizontally across its surface.⁷⁹
- 23.33 In his opinion the XPS window infill panels were also likely to have contributed both to the melting and dripping of material downwards⁸⁰ and the formation of pool fires promoting horizontal spread,⁸¹ but it was not possible to quantify their contribution, other than to say that is unlikely to have been significant, given the limits of opposed flow spread and the fact that those panels made up a small proportion of the external surface.⁸²
- 23.34 Finally, Professor Bisby was of the view that the vertical cavity barriers (even if installed correctly in the vertical or horizontal position) were unlikely to have been effective in preventing lateral flame spread, because of the combustibility of the ACM cassettes and their tendency to warp, delaminate and de-bond under heating.⁸³ In fact, there was evidence that melting and dripping polyethylene had formed pool fires locally on top of horizontal cavity barriers, thereby making matters worse.⁸⁴

Professor Torero

- 23.35 Professor Torero considered the lateral development of the fire as part of Stage 3 of his analysis, when considering the period between 01.30-02.30.⁸⁵ In his opinion, the architectural crown was responsible for the most rapid of the observed fire spread and behaved as a preferred path for lateral propagation.⁸⁶ In his written report he illustrated this by reference to video evidence from the east face which showed the fire front moving towards the south across the crown, causing burning debris to fall and ignite floors beneath it and causing the flames to advance towards the south-east corner of the tower.⁸⁷ He explained that the pooling of burning polyethylene below the crown effectively acted as a “feedback loop” which then served to accelerate the burning around the crown, causing fires to start at other places

⁷⁷ Professor Bisby oral evidence Day 78/189/13-190/25.

⁷⁸ Professor Bisby supplemental report [LBYS0000001] pp. 199/957.

⁷⁹ Professor Bisby oral evidence Day 78/202/23-203/24.

⁸⁰ Professor Bisby supplemental report [LBYS0000001] pp. 198/949-951

⁸¹ Professor Bisby supplemental report [LBYS0000001] pp. 238/1120, 242/1147-1150 and his oral evidence Day 78/204/22-206/17.

⁸² Professor Bisby oral evidence Day 78/206/1-17.

⁸³ Professor Bisby supplemental report [LBYS0000001] pp. 240/1135.

⁸⁴ Professor Bisby oral evidence Day 78/188/10-19, 189/23-190/5, 204/9-17.

⁸⁵ Professor Torero supplemental report [JTOS0000001] p. 2 footnote 1.

⁸⁶ Professor Torero supplemental report [JTOS0000001] pp. 71/2004-2013 and his oral evidence Day 77/146/7-147/15.

⁸⁷ Professor Torero supplemental report [JTOS0000001] pp. 71/2014-73/2026.

below it.⁸⁸ Once the falling debris had ignited fires at lower levels of the building, those new fires propagated upwards and joined up with other fires, thereby consuming entire sections of the building.

- 23.36 This pattern of flame development was demonstrated very effectively by two graphs in Professor Torero's written report, one for each of the two advancing lateral flame fronts (i.e. east-north-west and east-south-west). By plotting the time that each sector of the building had become affected by the advancing flame fronts, it was apparent that, after the initial vertical flame spread up the east face between 01.08 and 01.30, the lateral spread was always fastest at the top of the building, the lower levels being affected later. The graphs also showed that the downward flame spread had affected floors in groups: a group of floors would rapidly become involved in the fire as molten, burning debris fell down a particular sector, before the fire would spread up the building again.⁸⁹
- 23.37 In general, Professor Torero thought that the role of opposed flow flame spread was "very minor to negligible"⁹⁰ and that the primary or governing mechanism⁹¹ of downward and lateral flame spread was debris falling down the building and igniting fires below, which then progressed upwards.⁹² Given the complexity of the cladding system, he accepted that there were instances where fire had spread laterally through pathways in that system, but in his view that had not been the dominant mechanism.⁹³
- 23.38 Professor Torero's analysis showed that the rate at which the flats at floors 20 and above had been penetrated by the fire was almost the same as that at which the fire had progressed around the crown. That indicated that the flats at the top of the tower had been particularly vulnerable to the effects of the melting, dripping and burning of the polyethylene emanating from the panels forming the crown.⁹⁴
- 23.39 Professor Torero agreed with Professor Bisby that there were particular characteristics of the crown which had allowed faster lateral propagation than had occurred in other sections of the building, including its configuration, the exposed polyethylene edges and the C-shaped chimneys formed within it.⁹⁵ He also agreed that the lateral development of the fire at the top of the building could not be explained by the propensity of a vertical fire plume to widen as it rises. He drew attention to the fact that in some other fires, including the fire at The Torch in Dubai, the fire plume remained very narrow as it climbed vertically up the building. Much depended on the propensity of the system to sustain burning in such a way that the energy from the advancing vertical flame front enhanced the flame spread at the upper levels.⁹⁶
- 23.40 Although the lateral fire spread seen at Grenfell Tower was unusual when placed in the context of other international fires, there were some examples of previous fires where substantial lateral (and downwards) spread had occurred at the roof level of the building. In particular, the fire at the Monte Carlo Hotel and Casino in Las Vegas in 2008 had significant parallels to the fire at Grenfell Tower. In that incident the fire had spread laterally across the building's parapet and through polystyrene and polyurethane sections of the exterior insulation and

⁸⁸ Professor Torero oral evidence Day 77/148/7-149/4, 77/154/8-10.

⁸⁹ Professor Torero supplemental report [JTOS0000001] pp. 77/2094-78/2110 and oral evidence Day 77/154/14-156/19.

⁹⁰ Professor Torero oral evidence Day 77/157/21-23.

⁹¹ Professor Torero supplemental report [JTOS0000001] pp. 74/2038-2042.

⁹² Professor Torero oral evidence Day 77/157/21-159/7. In common with Professor Bisby, Professor Torero also highlighted the potential for the horizontal cavity barriers to act as a surface for the deposit of melting, dripping material, with the cavity barrier itself becoming a mechanism for flame spread: oral evidence Day 77/139/11-18.

⁹³ Professor Torero oral evidence Day 77/159/8-20.

⁹⁴ Professor Torero oral evidence Day 77/150/12-23.

⁹⁵ Professor Torero supplemental report [JTOS0000001] pp. 74/2031-2035 and his oral evidence Day 77/149/6-150/11.

⁹⁶ Professor Torero oral evidence Day 77/151/4-25.

finishing system (EIFS) panels. Molten, burning material had run down the outside of the building, starting fires in similar panels below and eventually penetrating the interior of the building.⁹⁷ That mechanism had also been observed in a fire at the Taksim İlk Yrdim Hospital in Istanbul, Turkey in April 2018, where the fire had started on the roof of the building and spread downwards and laterally to incorporate the external facade of the building.⁹⁸

- 23.41 Professor Torero thought it possible that the insulation had played a role in promoting lateral flame spread, but again, he did not think that it had been a dominant factor.⁹⁹ He did not accept that the rapid fire spread around the top of the building could be explained by the presence of insulation at the upper levels, despite the fact that some had been wrapped over the original concrete roof and placed below the architectural crown protected by a strip of aluminium flashing at the top of level 23.¹⁰⁰ He did not think there was any conclusive evidence that the fire at those levels had emanated from the insulation and, in principle, the pool fire at the base of the crown was capable of producing much more severe heating than burning insulation in that location.¹⁰¹ His opinion about the role of the crown was not undermined by the fact that some parts of the aluminium flashing beneath it had not melted, by comparison with other places on the face of the building where it had. Professor Torero explained that polyethylene melts at very low temperatures and starts turning to gas at around 300°C, which is significantly below the melting temperature of aluminium.¹⁰² In those circumstances he was not surprised that in some places the flashing had not been affected; the polyethylene acted like a “heat sink” drawing energy away from the aluminium and preventing the flashing from reaching melting temperature.¹⁰³

Dr Lane

- 23.42 In her written report Dr Lane drew attention to a number of potential pathways in the exterior cladding system and across the windows which could have facilitated lateral and horizontal flame spread. They included downward spread along the columns,¹⁰⁴ horizontal spread across the ACM spandrel panels,¹⁰⁵ horizontal spread along the heads and sills of the windows and of the XPS window infill panels¹⁰⁶ and horizontal spread around the architectural crown.¹⁰⁷
- 23.43 Dr Lane agreed with Professor Bisby and Professor Torero that the crown was highly effective in propagating the flame front across the tower and, at least in the early stages of the horizontal development of the fire, provided the primary route of fire spread.¹⁰⁸ In her opinion, that rapid fire progression across the crown was particularly significant in its effect on the flats at level 23 of the tower.¹⁰⁹

⁹⁷ Professor Torero supplemental report [JTOS0000001] pp. 74/2045-2052 and his oral evidence Day 77/161/5-162/7.

⁹⁸ Professor Torero supplemental report [JTOS0000001] pp. 74/2053-2055.

⁹⁹ Professor Torero oral evidence Day 77/159/21-160/5.

¹⁰⁰ Dr Lane supplemental report [BLAS0000010] p. 48 Fig. 10.47.

¹⁰¹ Professor Torero oral evidence Day 77/152/17-153/6.

¹⁰² On exposure to heat, aluminium melts at approximately 660°C: Professor Bisby supplemental report [LBYS0000001] pp. 104/461 and Professor Torero supplemental report [JTOS0000001] pp. 60/1648-1649, which puts the melting range for the aluminium plates of the ACM panels at 580-650°C.

¹⁰³ Professor Torero oral evidence Day 77/153/6-154/4.

¹⁰⁴ Pathway A: Dr Lane supplemental report [BLAS0000010] pp. 9-23 section 10.3.

¹⁰⁵ Pathway B: Dr Lane supplemental report [BLAS0000010] pp. 24-29 section 10.4.

¹⁰⁶ Pathway C: Dr Lane supplemental report [BLAS0000010] pp. 30-33 section 10.5.

¹⁰⁷ Pathway F: Dr Lane supplemental report [BLAS0000010] pp. 42-50 section 10.8.

¹⁰⁸ Dr Lane oral evidence Day 79/89/4-91/4.

¹⁰⁹ Dr Lane oral evidence Day 79/89/12-90/3.

- 23.44 She also drew attention to other mechanisms for downward and lateral flame spread, particularly at a time when the crown had been consumed by the fire. They included fire spreading down the columns and smaller fires propagating outwards.¹¹⁰ In her opinion, the presence of polyethylene in the ACM panels on the columns, together with the radiation from the fire within the cavity, which raised the temperature of materials below the fire, were likely to have been responsible for the downward movement of flame along the columns.¹¹¹
- 23.45 Dr Lane accepted that movement laterally across the ACM cassettes by way of opposed-flow flame spread would have been much slower than any spread of flame vertically.¹¹² However, she drew attention to the fact that the vertical gaps between the spandrel cassettes may have acted as channels which attracted flame propagation, thereby causing heating behind and across them.¹¹³ In her view, the configuration of the spandrel panels created perfect conditions for flaming combustion, with fuel on the outside, insulation on the inside and ventilation gaps between them.¹¹⁴
- 23.46 Dr Lane also considered that all the materials surrounding the windows and the window infill panels, including the uPVC surrounds, the original timber frames and the insulation were capable of causing horizontal (and vertical) flame spread, particularly after the ACM panels had fallen away during the fire.¹¹⁵ She drew attention to the role of the XPS window infill panels in promoting horizontal fire spread and to photographs taken after the fire which showed them in a damaged condition. She emphasised, however, that those panels constituted only a relatively small proportion of the external surface of the tower.¹¹⁶
- 23.47 The fact that combustible ACM panels had been the main constituents of the crown led Dr Lane to doubt whether cavity barriers could have been installed within it to prevent the rapid spread of fire effectively,¹¹⁷ but she noted that no attempt appeared to have been made to prevent the spread of fire horizontally around the crown. The construction drawings she had reviewed contained no requirement for horizontal cavity barriers or fire stopping to be fitted above the windows at level 23.¹¹⁸

3 Conclusions

- 23.48 Although I have seen the video evidence taken on the night of the fire many times, I still find the speed at which the fire took hold of the building and the size of the flames as they accelerated up the east face, causing molten debris to rain down onto the ground below, profoundly shocking. Although the speed at which the fire clawed its way up the building may have been slower than in some similar cases, to any onlooker those first few minutes must have been truly terrifying. It is not surprising that there were desperate shouts from the crowd below as the flames began to take hold with such ferocity.¹¹⁹
- 23.49 In its closing statement Arconic argued that the evidence heard in Phase 1 was too provisional in nature to enable any firm conclusions to be drawn about the development of the fire. I do not agree. There are, of course, some aspects of the matter on which the experts candidly

¹¹⁰ Dr Lane oral evidence Day 79/91/5-91/23.

¹¹¹ Dr Lane oral evidence Day 79/66/5-69/5 and her supplemental report [BLAS0000010] p. 11 Fig. 10.9 and 14/10.3.23.

¹¹² Dr Lane oral evidence Day 79/72/6-73/3.

¹¹³ Dr Lane supplemental report [BLAS0000010] p. 26/10.4.8 and Fig. 10.26, and her oral evidence Day 79/69/6-72/5.

¹¹⁴ Dr Lane oral evidence Day 79/71/3-9.

¹¹⁵ Dr Lane oral evidence Day 79/73/4-77/3, 82/19-83/2.

¹¹⁶ Dr Lane oral evidence Day 79/77/18-82/18.

¹¹⁷ Dr Lane oral evidence Day 79/93/14-94/6.

¹¹⁸ Dr Lane supplemental report [BLAS0000010] p. 50/10.8.24-10.8.25.

¹¹⁹ For example, [LBYS0000002] at 01.19.34, 01.24.44.

admitted that their views were provisional and that greater certainty would have to await the outcome of further investigations, but there are others on which I am satisfied that findings can and should be made at this stage. My conclusions on those matters are set out in the following paragraphs. The bulk of Arconic's submissions, however, were directed to demonstrating that the ACM panels were not the primary cause of the disaster and that other materials used in the refurbishment, such as the PIR and phenolic foam insulation boards and the uPVC window surrounds, were just as much, if not more, to blame for what happened. I consider that submission below.

- 23.50 Celotex, the manufacturer of the majority of the insulation boards used in the refurbishment, also submitted that the evidence given by the experts was only preliminary in nature and said that it would comment on the issues raised at this stage later on when further evidence had been given. Similarly, Rydon argued that the evidence was insufficient to enable me to reach any firm conclusions on the reasons for the spread of fire on the exterior of the building. My response to both those submissions is the same: despite the preliminary nature of some of the expert evidence, I am satisfied that there are some findings that can, and should, be made at this stage of the Inquiry.
- 23.51 Kingspan, the manufacturer of the other insulation boards used in the refurbishment, was prepared to acknowledge that, although some of the evidence was of a preliminary nature, some matters had been established with sufficient certainty to justify making findings about them. In particular, it submitted that the evidence demonstrated that the most important contributor to the development of the fire was the presence of the ACM panels. It also submitted that the nature and extent of the fire would not have been different if mineral wool insulation had been used.
- 23.52 In the light of the video evidence itself and the expert evidence summarised above, none of which was challenged, I am satisfied that, although many different factors played a part, the principal reason why the flames spread so rapidly up the building was the presence of the ACM panels with polyethylene cores, which had high calorific value, melted and acted as a source of fuel for the growing fire. I also think it more likely than not that the presence of PIR and phenolic foam insulation boards behind the ACM panels (and perhaps the EPDM membrane and the Aluglaze window infill panels) contributed to the rate and extent of vertical flame spread, but it is not possible at this stage to quantify the extent of their respective contributions. Further investigation which is to be the subject of evidence in Phase 2 may enable me to come to a more definite conclusion about those matters in due course. I should like to be able to do so, because I think it would be in the public interest to obtain a better understanding of how these materials behave in conjunction with each other when exposed to fire. Further work also needs to be done on the extent to which exposed edges of the ACM panels and insulation boards may have contributed to the spread of flame.
- 23.53 It seems likely that some aspects of the design of the cladding system and the geometry of the tower also contributed to the speed at which the fire developed vertically, but the evidence currently available does not enable me to reach any firm conclusion at this stage. Although Professor Torero urged caution in determining the role played by the details of the design of the cladding, such as the width and length of the cavities, Professor Bisby was "almost certain" that the extensive vertical channels and cavities within the system had made a contribution. The video evidence tends to support the conclusion that the principal route of flame spread was initially in the area of the columns and given that flames are known to extend significantly when confined in a vertical channel, it seems to me to be very possible that the presence of the vertical channels in the cladding system around the columns was

indeed a contributing factor. The video evidence, which shows flames elongating up the wing wall in the re-entrant corners between the spandrel panels and the columns suggests that the geometry of the building may also have played a part.

- 23.54 In the light of the available video and photographic evidence, both during and after the fire, and the unchallenged expert evidence summarised above, I am satisfied that the main reason why flames spread so rapidly down and around the tower after reaching the top at around 01.30, was also the presence of ACM panels containing polyethylene cores. In particular, I am satisfied that the principal mechanism for horizontal and downwards flame spread was the melting and dripping of burning polyethylene from the crown and from the spandrel and column panels, which ignited fires lower down the building. Those fires then travelled back up the building, thereby allowing the flame front to progress diagonally across each face of the tower. The propensity of polyethylene to melt and drip and spread flame downwards was very clearly demonstrated in the course of Professor Bisby's oral presentation in June 2018¹²⁰ and was particularly evident on the night of the fire in the thermal images, where a "waterfall" of burning, molten material can be seen cascading down the tower, setting fire to lower levels.¹²¹
- 23.55 There is also compelling expert evidence, which I accept, that the crown was responsible for the most rapid of the observed lateral fire spread. That is supported by the many videos taken on the night and was a phenomenon observed consistently on each of the four faces as the flame front progressed around the top of the building.¹²²
- 23.56 Arconic suggested in its closing statement that the lateral fire spread at the top of the building might have more to do with the insulation behind the ACM panels, but that is not consistent with the video evidence showing the leading flame front progressing around the crown and was firmly rejected by Professor Torero in the light of the burning properties of the respective materials. He was also clear that the condition of the aluminium flashing beneath the crown did not undermine his conclusions, given the very different melting temperatures of polyethylene and aluminium.
- 23.57 Rydon, the main building contractor for the refurbishment, submitted that the lateral progression of the fire around the crown was not significantly different from that which took place in other sections of the building and argued that the diagonal flame front could be explained by the normal fire dynamics of upward and lateral spread. Again, those contentions are inconsistent with the video evidence and were not accepted by the experts. Professor Bisby and Professor Torero, whose evidence I accept, were both clear that the diagonal progression of this fire could not be explained simply by the propensity of a flame to widen as it travels upwards.
- 23.58 I also accept the evidence of Professor Bisby and Dr Lane that the columns were a principal route of downwards fire spread and I think it more likely than not that the extensive vertical cavities in the columns (particularly at the tips and down the sides at the vertices with the spandrel panels) and the longer ACM cassettes within the columns contributed to the rate at which the fire spread downward.

¹²⁰ Professor Bisby presentation 20 June 2018 Part 1 at slides 29-30 and Part 1 of his video presentation at 47:42-48:04 and 52:45-55:55.

¹²¹ [LBYS0000004] (north face) sequence 1 between 01.28 and 01.43 at 5:45 (time in the video), [LBYS0000005] (west face) sequence 4 between 02.52 and 03.03 at 6:23, sequence 6 between 03.12 and 03.23 at 11:40, sequence 10 between 03.55 and 04.13 at 31:30, [LBYS0000006] (south face) sequence 4 between 02.43 and 02.58 at 5:10, sequence 8 between 03.52 and 04.12 at 14:28 and 16:48.

¹²² Professor Torero supplemental report [JTOS0000001] pp. 71/2014-72/2026, and [LBYS0000003] (east face) at 10:39 and 12:32 (time in the video), [LBYS0000004] (north face) at 14:10 (time in the video), [LBYS0000005] (west face) at 6:52 and 31:58, and [LBYS0000006] (south face) at 11:14.

- 23.59 Given the complexity of the exterior cladding system, there may well have been other mechanisms at work by which the fire was able to spread downward and horizontally, particularly where localised fires occurred across the facade. They may have included opposed-flow flame spread across the ACM panels and the insulation and the spread of fire, both horizontally and downward, through the XPS window infill panels, but further work will be necessary to ascertain the significance of any contribution that either of those mechanisms may have made. Vertical cavity barriers were unlikely ever to have been effective once the fire was able to progress across the ACM panels and horizontal cavity barriers may have provided surfaces on which melting and dripping polyethylene could lodge, enabling localised pool fires to develop.
- 23.60 Finally, I accept the evidence of all three experts that there are fundamental problems with the use of intumescent horizontal cavity barriers to limit external flame spread in a cladding system of this kind. That being so, I think it unlikely that defects in the installation of the cavity barriers were of great significance in the rate of vertical flame spread, given the extent to which the flames took hold of the ACM panels from the very early stages of the fire.
- 23.61 I accept the evidence of Professor Bisby and Professor Torero that the Grenfell Tower fire was unusual in the way that it spread laterally and was able to envelop the entire building in under three hours. With that in mind, I intend in Phase 2 of the Inquiry to examine (among other things) the extent to which the regime for testing materials intended for use in external walls (including thermoplastic polymer materials such as polyethylene) and the regulations governing their use were, and are, adequate to identify and control the potential dangers from downward and horizontal as well as vertical flame spread. I shall also examine what was and should have been known, both by those in the construction industry and by those in central government responsible for setting fire safety standards, about the particular dangers posed by thermoplastic polymers.
- 23.62 In the context of analysing the behaviour of different parts of the cladding system, both Professor Bisby and Professor Torero were at pains to emphasise its complexity, not so much in terms of its structure, as in terms of the interactions between its various components when exposed to fire.¹²³ I have asked them to carry out further work on that in the hope that a better understanding can be obtained of how systems of this kind respond under those conditions. That should not only tell us more about the fire at Grenfell Tower itself, but should also provide valuable information for those involved in future projects. In the next phase of the Inquiry I also intend to investigate the extent to which those complexities were recognised and understood by those involved in the design of the refurbishment and the extent to which the current evaluation and testing regime is capable of ensuring that they are properly assessed.

¹²³ Professor Bisby oral evidence Day 78/163/4-165/11.

Chapter 24

Internal Penetration and the Loss of Compartmentation

1 Introduction

- 24.1 It is clear from the factual evidence that the fire on the outside of the building quickly entered many flats and that at a very early stage smoke spread widely through the interior of the building, with many lobbies becoming affected as early as around 01.20. It is difficult to draw reliable conclusions about what caused smoke to spread into particular areas of the tower, but a number of key matters have emerged from the evidence which help to explain why the smoke spread so rapidly and how breaches of internal compartmentation were able to occur. The Inquiry's experts were largely in agreement about the circumstances which are likely to have led to that result.

2 Professor José Luis Torero

- 24.2 Professor Torero considered internal penetration of the fire as part of Stage 3 of his analysis, representing the period from 01.30-02.30.¹ In his opinion, the flames generated by the fire in the cladding system are likely to have resulted in very significant heat fluxes, potentially in the range of 20 to 120kW/m², which would have exceeded the amount of heat required to ignite the combustible materials present in the cladding, including those around the windows.² In those circumstances there were many different routes by which fire could break into the building, given that the external envelopes of buildings of this kind are designed to withstand heat emanating from fires in adjacent buildings, rather than significant fires in their own facades, as occurred in this case.³
- 24.3 Professor Torero identified three principal routes by which the fire is likely to have penetrated the building from the outside:
- a. failure of the window glazing;
 - b. failure of the kitchen extractor fans; and
 - c. failure of the uPVC window surrounds.
- 24.4 Professor Torero explained that extensive studies had shown that all forms of glazing fail when exposed to a heat flux of between 5 and 10kW/m² for between 60 and 300 seconds and that the higher the heat flux, the shorter the failure time. In those circumstances, once the windows became engulfed by the external flame front, the fire could be expected to enter the building.⁴ However, the exterior of the tower was particularly vulnerable in certain other important respects, principally the inclusion of extraction fans in the kitchen windows. Professor Torero described by reference to photographs taken after the fire the various mechanisms by which the extraction fans had allowed smoke and flames to enter flats, depending on the level of heating which had occurred at particular locations.⁵ The

¹ Professor Torero supplemental report [JTOS00000001] p. 2, footnote 1.

² Professor Torero supplemental report [JTOS00000001] pp. 78-79 lines 2112-2116, 2138-2142 and Table 4 p. 80.

³ Professor Torero supplemental report [JTOS00000001] p. 78 lines 2112-2115.

⁴ Professor Torero supplemental report [JTOS00000001] p. 79 lines 2145-2148 and evidence Day 77/162/10-24.

⁵ Professor Torero supplemental report [JTOS00000001] pp. 80-85 lines 2156-2205 and Figs. 36-45.

photographs indicate that the extraction fans were the weakest components in the window arrangement in terms of an ability to withstand heat and were potentially “a significant way for the fire to get back in”.⁶

- 24.5 The existence of uPVC window surrounds, which Professor Torero considered in the context of the means by which the fire had escaped from the compartment of origin, represented another point of vulnerability. The propensity of uPVC to melt and deform at a relatively low temperature meant that the window surrounds provided another route by which the fire could enter flats elsewhere in the tower.⁷
- 24.6 Professor Torero agreed that all the weaknesses in the window arrangement identified in Dr Barbara Lane’s report⁸ would have tended to increase the rate at which flames were able to enter the building. He emphasised, however, that, since none of the windows had been designed to withstand the level of heating to be expected from a fire in the cladding, it was not reasonable to expect them to have prevented flames breaking into flats.⁹ He accepted that smoke may have been able to enter the building through gaps around the sides of the window framing, even though they were not a significant route for the re-entry of flame.¹⁰ Professor Torero accepted that those characteristics of the window arrangements could have had a “more significant impact” in cases where falling debris had led to the downwards spread of flame. In those circumstances localised fires could have entered the building through the extraction fans or through gaps along the sides of the windows.¹¹
- 24.7 Overall, while there were some components of the window systems, including the extraction fans, which were more vulnerable than others, there was no evidence that they were more likely to have provided a route for fire to enter and ignite the interiors of flats. Given the high levels of heat flux on the facade, a path for re-entry would inevitably have been created in one way or another.¹²
- 24.8 Professor Torero noted that there was evidence of smoke penetration through the lobbies and into flats located on the west side of the building long before the fire itself had reached the west face. In particular, he drew attention to night vision images taken by the NPAS helicopter which showed smoke coming out of several windows on the west face between 01.57 and 02.40, particularly at floors 12 and 20.¹³ In his view that indicated clearly that smoke had spread from one flat, across the lobby and into a second flat on the opposite side of the building. The boundaries of at least two flats had therefore already been breached by that time.¹⁴
- 24.9 Despite major damage to many of the flats, a significant number did not reach flashover, even though the fire had potentially resulted in a very hot, thin ceiling layer of smoke and gas capable of igniting other materials in the compartment.¹⁵ In circumstances where the extent of damage to flats in the tower ranged from minor to severe, he was of the opinion that the thermal loading imposed by the external fire was likely to have been a secondary factor in

⁶ Professor Torero supplemental report [JTOS0000001] p. 80 lines 2165-2166 and oral evidence Day 77/163/2-164/10.

⁷ Professor Torero supplemental report [JTOS0000001] p. 79 lines 2120-2121 and pp. 43-44 Figs. 11(a)-(c) of his report where a series of photographs show debonding and deformation of the uPVC due to exposure to heat.

⁸ Section 9 of Dr Lane’s supplemental report [BLAS0000009].

⁹ Professor Torero supplemental report [JTOS0000001] p. 79 lines 2126-2133.

¹⁰ Professor Torero oral evidence Day 77/165/2-166/14.

¹¹ Professor Torero oral evidence Day 77/169/20-170/12.

¹² Professor Torero supplemental report [JTOS0000001] p. 86 lines 2212-2220.

¹³ Professor Torero supplemental report [JTOS0000001] pp. 88-89 Figs. 48-52. As is evident from the factual Narrative, the external flame did not reach the top of column A1 on the north-west corner until 02.51: Professor Bisby supplemental report [LBYS0000001] p. 221 lines 1034-1037.

¹⁴ Professor Torero supplemental report [JTOS0000001] p. 88 lines 2248-2256.

¹⁵ Professor Torero supplemental report [JTOS0000001] p. 91 lines 2328-2333 and pp. 92-97 Figs. 54-63.

determining the severity of the fire in any particular compartment, the primary factor having been the thermal loading imposed when the contents of the flat ignited. In other words, the heat introduced by the external fire was significant only in that it acted as the source of ignition of the contents of the flat. The factor governing the intensity of the fire in any given compartment had been the distribution of fuel and the extent to which the furniture and fittings had been consumed. The first items to ignite typically determined whether a fire would grow to become fully developed.¹⁶

- 24.10 In Professor Torero's opinion the early spread of smoke through the tower was most likely to have been a consequence of flat doors having been left open rather than having failed while closed due to exposure to heat or flame. Although deficiencies in the performance of flat doors had been identified during tests conducted by the BRE after the fire, he pointed to the fact that the door being tested had demonstrated approximately 15 minutes' fire resistance before succumbing to flaming.¹⁷ That corresponded to a failure temperature of about 740°C, given the incremental temperature increases which are imposed when conducting those tests.¹⁸ Such a temperature was higher than that at which flashover is likely to have occurred and would correspond to that reached in flats which had sustained major damage.¹⁹ In flats which had sustained only moderate or severe damage, the fire was unlikely to have been hot enough to cause the door to fail.²⁰
- 24.11 When explaining the early spread of smoke across lobbies and into other compartments, Professor Torero identified two possible explanations for flat doors having been open: the absence of working self-closing devices and the intervention of firefighters. He explained that, if self-closing devices had been missing from the doors of flats or had not been working properly, open doors would have provided a means by which large quantities of smoke could have moved through the building at an early stage.²¹ In his view that may have had a very significant effect on compromising the lobbies.²²
- 24.12 In relation to the intervention of firefighters, Professor Torero referred to the standard practice of fire and rescue services of setting hoses into rising mains on the floor below the fire, with the result that hoses trailing between floors would have kept some of the doors to the stairs open. He also noted that there had been evidence of firefighters having to force entry into flats to carry out search and rescue operations. That would inevitably have left those flats without a fully functioning fire door to contain the smoke.²³ If there were fires on several floors and the occupants were trying to leave the building, there was an obvious risk of a conflict between firefighting operations and the occupants' need to escape.²⁴

¹⁶ Professor Torero supplemental report [JTOS0000001] p. 93 lines 2364-2377.

¹⁷ BRE test report [MET00019996].

¹⁸ Professor Torero supplemental report [JTOS0000001] pp. 90-91 lines 2305-2323 and pp. 98-99 lines 2409-2448.

¹⁹ Professor Torero supplemental report [JTOS0000001] p. 99 lines 2448-2449. Of 113 flats which were surveyed by Professor Torero where fire and smoke breached the compartmentation, 13 experienced minor damage, nine moderate damage and 91 major damage: [JTOS0000001] p. 92 lines 2342-2363 has a definition of those.

²⁰ Professor Torero supplemental report [JTOS0000001] pp. 99-100 lines 2454-2460. This was evidenced by the fact that for the flat doors where the damage in the flats was of this nature (i.e. no post-flashover fire) the damage to the doors could be explained by firefighter intervention or thermal insult from the communal lobby side following failure of all the doors on that floor.

²¹ Professor Torero supplemental report [JTOS0000001] p. 100 lines 2493-2494 and p. 102 lines 2517-2524.

²² Professor Torero oral evidence Day 77/186/15-18, 77/176/11-22-185/1-16. Professor Torero Addendum report dated 20 October 2018 [JTOS0000002] p. 2, section 1.

²³ Professor Torero illustrated this in his report with particular reference to firefighter evidence from floors 4, 5, 9, 11 and 12: [JTOS0000001] pp. 102-104 lines 2525-2592 and Addendum report [JTOS0000002] p. 2, section 2.

²⁴ Professor Torero oral evidence Day 77/189/8-190/9.

- 24.13 In her report Dr Lane had identified a “hot zone” in the stairwell between floors 13 and 16.²⁵ Professor Torero thought that it was “perfectly possible” that it might have been due to firefighter activity, including the holding open of several stair doors at or near those floors.²⁶ In general he was of the view that the activities of firefighters in holding open doors and forcing entry to flats made a potentially very significant contribution to the loss of compartmentation and the spread of smoke within the building during this third phase of his analysis.²⁷
- 24.14 In an Addendum report, Professor Torero also identified the failure of doors caused by the effects of fire as a potential contributing factor to the spread of fire and smoke in the period leading up to 02.30, but he did not think it was likely to have been a significant factor in the earlier stages, given the likely performance of the fire doors.²⁸ He also thought that the variation in the performance of flat doors was likely to have reflected differences in their construction and maintenance.²⁹
- 24.15 Professor Torero identified other factors which could have contributed to the movement of smoke through the tower. They included the movement of occupants,³⁰ smoke leakage through flat doors or the doors to the stairwell³¹ and smoke spreading through the smoke control system.³² He did not consider those factors to be as significant as the existence of open doors, however.³³
- 24.16 Professor Torero explained that, in previous fires in which there had been a significant number of casualties (including major fires in South and Central America and the United States), breaches of compartmentation had occurred allowing smoke to spread into vital parts of the building, including the stairs and common parts.³⁴ In contrast, in fires where compartmentation had not been breached and the common parts had remained clear of smoke, there had been no or only a limited number of casualties.³⁵ For example, in The Address fire in Dubai one of the main structural walls had separated the apartments from the corridor, so there was a very significant compartmentation barrier.³⁶
- 24.17 In his analysis of the fire Professor Torero described Stage 4, between 02.30 and the extinguishing of the fire,³⁷ as “the untenable stage”. He noted that in that phase of the fire a very large number of flats had been affected by the external fire, compartmentation had been breached at many floors and the scale of the fire exceeded the firefighters’ capacity to contain

²⁵ At paragraphs 14.4.8-14.4.36 of her report, [BLAS0000014] pp. 21-29, Dr Lane identified evidence of a “hot zone” or “hot spot” in the middle of the stairs around floors 13-16 with temperatures having reached above 150°C given, for example the melting to the stair lights and the damage to the lobbies and stair doors which had occurred in those locations.

²⁶ Professor Torero oral evidence Day 77/196/8-197/13.

²⁷ Professor Torero oral evidence Day 77/190/15-190/24.

²⁸ Professor Torero Addendum report [JTOS0000002] p. 2 section 1 and oral evidence Day 77/180/4-181/16.

²⁹ Professor Torero oral evidence Day 77/183/15-184/2.

³⁰ Professor Torero supplemental report [JTOS0000001] p. 102 lines 2510-2516.

³¹ Professor Torero supplemental report [JTOS0000001] p. 105 lines 2633-2637, with reference to section 19 of Dr Lane’s original report [BLAS0000019].

³² Professor Torero supplemental report [JTOS0000001] p. 106 lines 2638-2645. In oral evidence he explained that it was difficult to know, at this stage, whether the evidence of smoke entering some of the lobbies through the dampers in the smoke control system (e.g. the oral evidence of Farhad Neda on floor 23: Day 61/40/25-41/2-21) was due to the fact that the system was designed to deal with a fire on only one floor, or whether there were non-compliances in the system which led to that smoke spread: Day 77/191/8-193/7.

³³ Professor Torero oral evidence Day 77/184/3-185/4; Professor Torero supplemental report [JTOS0000001] p. 105 lines 2633-2637 and p. 106 lines 2638-2645. In his supplemental report Professor Torero also considered the possibility that large-scale effects (including the stack effect and the piston effect) may have influenced smoke migration, but did not consider these to be of any significance: [JTOS0000001] pp. 104-105 lines 2593-2632.

³⁴ Professor Torero supplemental report [JTOS0000001] p. 89 lines 2258-2273. Professor Torero illustrated this by reference to a number of fires in other countries between 1972 and 1986.

³⁵ Professor Torero supplemental report [JTOS0000001] p. 89 lines 2275-2284.

³⁶ Professor Torero oral evidence Day 77/178/3-179/1.

³⁷ Professor Torero supplemental report [JTOS0000001] p. 2, footnote 1 and pp. 122-130.

and extinguish it.³⁸ By “untenable” Professor Torero meant both conditions that were actually life-threatening and conditions that were perceived by occupants to be life-threatening (e.g. as a result of poor visibility).³⁹ Consequently, although he described conditions as generally “untenable” during this phase, he acknowledged that they were dynamic and variable and that escapes were clearly possible after 03.00 if individuals “got the right window”.⁴⁰ During that period evacuation remained “the preferred option”.⁴¹

3 Professor Bisby

24.18 In his Supplemental Phase 1 report Professor Bisby drew attention to some important evidence relating to the entry into the building of smoke and flames.⁴² He noted that a large number of witnesses had commented on the early ignition or failure of kitchen extraction fan units as a route by which fire and smoke had been able to gain entry during the early stages of the fire when it climbed over the east face of the tower. He referred specifically to evidence from the following floors of the tower:⁴³

- a. floor 7 (Jose Vieiro, Flat 46);
- b. floor 8 (Shantilal Patel, Flat 56);
- c. floor 9 (Zakariya Chebiouni, Flat 66);
- d. floor 10 (Hoang Khanh Quang, Flat 76);
- e. floor 11 (Nadia Jafari, Flat 86);
- f. floor 17 (Virgilio (Larry) Castro, Flat 146); and
- g. floor 21 (Helen Gebremeskel, Flat 186).

24.19 Floor 14 (Flat 116) can also be added to this list since Nida Mangoba reported that the extractor fan and the glass in her kitchen window smashed into her kitchen with a “loud... pop” when the external flame front reached her flat.⁴⁴

24.20 Professor Bisby also drew attention to the fact that a large number of residents had referred in their evidence to draughts from gaps around the window frames in their flats.⁴⁵ One witness, Antonio Roncolato (Flat 72, floor 10), had described smoke coming into his flat through gaps of that kind and referred to a video he had taken showing that happening at around 02.30.⁴⁶ Evidence from residents living on floors 6 and 7 of the tower⁴⁷ suggested that early failure of the uPVC window surrounds had occurred inside kitchens on the east face as the fire reached those floors. Professor Bisby also drew attention to examples of window panes having failed when exposed to the fire, referring, in particular, to evidence from residents on floors 11 (Flat 86)⁴⁸ and 18 (Flat 156),⁴⁹ who had witnessed the windows in their kitchens breaking due to

³⁸ Professor Torero supplemental report [JTOS00000001] p. 122 lines 2888-2890.

³⁹ Professor Torero supplemental report [JTOS00000001] p. 2 footnote 2 and oral evidence Day 77/193/20-195/5.

⁴⁰ Professor Torero oral evidence Day 77/195/6-196/6.

⁴¹ Professor Torero supplemental report [JTOS00000001] p. 132 lines 3111-3112.

⁴² Professor Bisby supplemental report [LBYS00000001] pp.244-260 sections 1160-1223.

⁴³ Professor Bisby supplemental report [LBYS00000001] pp. 254-256 sections 1180-1189.

⁴⁴ Nida Mangoba first witness statement [IWS00001084] p. 4 sections 18-19.

⁴⁵ Professor Bisby supplemental report [LBYS00000001] p. 256 sections 1190-1193.

⁴⁶ Professor Bisby supplemental report [LBYS00000001] p. 256 section 1194; Roncolato oral evidence Day 52/43/13-44/24.

⁴⁷ Flats 36 (Ramiro Urbano first witness statement [IWS00000496] p. 5 section 21) and 46 (Jose Vieiro first witness statement [IWS00001122], p. 3 sections 12-13, 17).

⁴⁸ Nadia Jafari first witness statement [IWS00000683] p. 4 section 18 and Day 54/25/16-31/13, 54/9/17-10/17.

⁴⁹ Shah Ahmed first witness statement [IWS00000388] p. 10 section 33.

the advancing external fire.⁵⁰ He also referred to evidence from several “Flat 6” residents who said that the self-closing devices on their front doors had not been working on the night of the fire and that some of the doors had been left open as they left their flats.⁵¹

- 24.21 In Professor Bisby’s opinion, both the materials and products used in the refurbishment and its design were likely to have contributed significantly to the entry of both smoke and flames as the fire spread over and through the cladding.⁵² He also thought that the route by which they had entered the building probably changed as the fire developed: when it was in its early stages they were more likely to have entered by attacking the materials around and within the windows (including the extraction fans), but when it had grown larger, the route of entry had changed to breaking the window panes by the imposition of high levels of heating.⁵³ Nonetheless, the materials and configuration of the cladding around the windows had continued to be important in relation to downward and horizontal fire spread due to the steady proliferation of smaller, local fires associated with them.⁵⁴

4 Dr Lane

- 24.22 In Chapter 9 of her supplemental report Dr Lane identified a number of routes by which the fire could have penetrated the interior of the building. They included entering through the combustible materials in the window reveals, through the failure of window panes, through the kitchen extraction fans and through the XPS window infill panels.⁵⁵

- 24.23 In that report Dr Lane identified a number of concerns about the ability of many of the front doors to the flats to withstand smoke and flames.⁵⁶ In section 19 she concluded that it was likely that the doors had failed to control the spread of smoke and flames in the following ways:⁵⁷

- a. failing to prevent the spread of smoke and flames through gaps between the door leaf and the door frame;
- b. failing to resist the spread of fire and smoke from a flashover fire due to the presence of untested components (including, in a large proportion of the doors, glazing). Dr Lane noted that the testing of a glazed door taken from the tower by the BRE had achieved only 15 minutes’ fire resistance instead of the 30 minutes required by the standards in force when it was installed;⁵⁸ and
- c. failing to self-close effectively after the residents had left.

- 24.24 Dr Lane explained that the significance of such defects was likely to vary depending on the location of the flat. In principle, a non-compliant door could have severe consequences in one location but none in another where the effects of the fire were not so serious.⁵⁹ For example, she considered that the conditions that had been experienced by Antonio Roncolato in Flat 72 on floor 10 were very different from those that would have been experienced by the occupants

⁵⁰ Professor Bisby supplemental report [LBYS0000001] pp. 256-257 sections 1197-1200.

⁵¹ Professor Bisby supplemental report [LBYS0000001] p. 257 sections 1201-1202.

⁵² Professor Bisby supplemental report [LBYS0000001] p. 257 section 1204.

⁵³ Professor Bisby supplemental report [LBYS0000001] p. 257 section 1205 and oral evidence Day 78/207/8-208/15.

⁵⁴ Professor Bisby supplemental report [LBYS0000001] p. 257 section 1207 and oral evidence Day 78/208/4-15.

⁵⁵ Dr Lane supplemental report [BLAS0000009] pp. 30-35 section 9.4.

⁵⁶ Dr Lane supplemental report sections 15 [BLAS0000015] and 19 [BLAS0000019].

⁵⁷ Dr Lane supplemental report [BLAS0000019] p. 20 section 19.5.28 and oral evidence Day 81/30/2-36/3.

⁵⁸ Dr Lane supplemental report [BLAS0000019] p. 19 section 19.5.16.

⁵⁹ Dr Lane oral evidence Day 81/3/21-4/16.

of Flat 201 on floor 23.⁶⁰ She said that, in general, fire doors were a very significant fire safety measure.⁶¹ Although Dr Lane accepted that it was inevitable that the doors would fail at some point, she emphasised that their performance could be particularly important for those who were waiting in their flats.⁶² She did not accept that the failures to comply with appropriate standards she had identified had had only a limited effect on the development of the fire or on the outcome for residents.⁶³ She emphasised in oral evidence that the self-closing devices on flat doors were very important for maintaining compartmentation; the whole point of having a functioning self-closing device was to ensure that the door closed behind a person as they left the flat, so ensuring that the protection it provided was maintained.⁶⁴

- 24.25 Dr Lane recognised that firefighters had broken down the doors of some flats on various floors, but she cautioned against attributing too much significance to their activities. In her view other factors were likely to have contributed to the spread of smoke in the lobbies; it all depended on the particular location.⁶⁵ In her opinion the primary route by which smoke and heat had spread into the stairwell was through the doors from the lobbies and was probably caused by many of those doors being opened by firefighters and occupants or held open by firefighting equipment or other objects.⁶⁶ She explained that she would have expected to see more severe damage to the concrete in the stairwell if the doors from the lobbies to the stairs had failed entirely. Accordingly, the more likely explanation for the spread of smoke into the stairwell was activities associated with the doors, rather than a failure of the doors themselves.⁶⁷ Despite that, she had a number of concerns about the doors into the stairwell,⁶⁸ including the fact that, when tested by the BRE to current standards, one of the stair doors resisted fire adequately for only 16 minutes.⁶⁹
- 24.26 During her inspection of the tower Dr Lane had identified particularly acute damage at floors 13 to 16. The plastic stair lights between floor 13 and floor 15 had been completely destroyed and severe damage had been caused to the lobbies on floors 13, 14 and 16. The pattern of damage differed from that seen in other parts of the stairs, including at higher floors, where the plastic lights had not suffered such severe damage.⁷⁰ In her opinion the most likely explanation for this “hot zone” was smoke and heat entering the stairs when the stair doors were opened during the fire. She thought that that may have been linked to firefighting operations during the night, including operations around floors 10 to 14 at around 02.00.⁷¹
- 24.27 Other possible routes by which smoke could have spread within the building were identified by Dr Lane. They included:
- a. Through the ducting and vents of the smoke extraction system. Some residents said that they had witnessed smoke entering lobbies through the builders’ ducts and louvres for

⁶⁰ Dr Lane oral evidence Day 81/35/9-19.

⁶¹ Dr Lane oral evidence Day 81/32/9-21.

⁶² Dr Lane oral evidence Day 81/33/2-12.

⁶³ Dr Lane oral evidence Day 81/33/13-18.

⁶⁴ Dr Lane oral evidence Day 81/38/4-18.

⁶⁵ Dr Lane oral evidence Day 81/36/20-37/13.

⁶⁶ Dr Lane supplemental report [BLAS0000019] p. 45 section 19.7.27 and oral evidence Day 81/39/19-41/15.

⁶⁷ Dr Lane oral evidence Day 81/40/11-41/7, 81/45/2-25 and 81/63/19-64/15.

⁶⁸ Dr Lane supplemental report [BLAS0000019] pp. 29-32 sections 19.6.11-19.6.29, Appendix M [BLAS0000034].

⁶⁹ Dr Lane supplemental report [BLAS0000019] p. 31 section 19.6.17.1; BRE Global Test Report [MET00021780]; oral evidence Day 81/61/3-63/13.

⁷⁰ Dr Lane supplemental report [BLAS0000019] pp. 41-42 sections 19.6.92-19.6.98.

⁷¹ In particular Dr Lane noted the rescue operation described by FF Oliver Desforges at around floors 10-11 with the stair door being held open around 02.10 and also firefighter activity around floor 14 from 02.00 onwards: [BLAS0000019] p. 41 sections 19.6.93(e)-(f) and section 19.6.97; oral evidence Day 81/78/9-80/22.

the smoke control system.⁷² If so, that might indicate that there had been a failure of compartmentation in respect of the shafts in the smoke extraction system, but further work would be necessary to confirm whether that had been the case.⁷³

- b. Through the uncompleted boxing protecting the new gas riser in the stairs, which contained oversized holes on the lobby side which had not been fire-stopped. Dr Lane was very concerned about the potential for smoke to spread from one lobby to another through the boxing, although she was unable to form a final view about that at this stage.⁷⁴

5 Conclusions

- 24.28 Although the fire at Grenfell Tower was not an event which the building had been designed to withstand, the rapid failure of compartmentation and the speed at which smoke was able to spread into the lobbies and stairs is of very considerable concern. As Professor Torero pointed out, in comparable fires in other countries (including, in particular, several of the large fires in Dubai), few casualties occurred because the buildings' compartmentation was maintained. At Grenfell Tower, by contrast, a number of key fire protection measures, both active and passive, failed to operate as effectively as could reasonably have been expected, even taking into account the fact that they were required to respond to circumstances for which they were not designed in order to mitigate the effects of a fire which affected many floors at the same time.
- 24.29 I accept the evidence of Professor Torero that the glass in the windows could be expected to fail when it was exposed to high levels of heating resulting from the fire in the cladding and it is also clear from the evidence that some windows were open, providing a simple route for the fire to enter those parts of the building. The sad fact is that once the fire on the outside of the building had developed to any significant extent it was inevitable that it would find its way inside by one means or another, regardless of any weaknesses or defects in the windows or the construction of the external envelope. It is striking, nonetheless, that several residents described the fire coming into their kitchens through the openings caused when the extraction fans were dislodged. That is consistent with the pattern identified by Professor Bisby of such failures having occurred early in the development of the fire and tends to suggest that during those early stages the ease with which the fire was able to penetrate the building may have been greater because of the propensity of the fan units to deform and become dislodged when exposed to heat. I also accept the evidence of Professor Torero and Professor Bisby that the defects in the window arrangements and the configuration of the cladding around them may have contributed to the downward and horizontal progress of the fire.
- 24.30 If Professor Torero was right in saying that the external fire provided little more than the source of ignition for the contents of individual flats (and I have no reason to think that he was not), that raises the question why the heat and smoke generated by the fires in those flats were not contained by the compartmentation of the building, at least in the early stages. It is a difficult question to answer, but there is evidence to suggest that a number of factors are likely to have contributed to the loss of effective compartmentation.

⁷² In particular the evidence of Farhad Neda on floor 23, Day 61/40/25-45/18; Daniel Griffin on floor 6, first witness statement [IWS00000173] p. 7 section 48; Emma O'Connor on floor 20, first witness statement [IWS00000121] p. 6 section 27.

⁷³ Dr Lane oral evidence Day 81/162/15-172/10.

⁷⁴ Dr Lane oral evidence Day 81/69/6-75/14.

24.31 In the early stages of the fire, when flames were accelerating up the east face of the tower, forcing the occupants of “Flat 6s” to leave, a number of the doors to those flats appear to have been left open due to the absence of effective self-closing devices.⁷⁵ There is evidence that the doors to “Flat 6s” on the following floors remained open for this reason:

- a. Flat 76 on floor 10;⁷⁶
- b. Flat 86 on floor 11;⁷⁷
- c. Flat 116 on floor 14;⁷⁸
- d. Flat 136 on floor 16;⁷⁹
- e. Flat 146 on floor 17.⁸⁰

As a result, smoke which had been able to enter those flats was able to get into the lobbies.

24.32 It is also possible that the doors to the following flats remained open for the same reason, although the evidence is less clear:

- a. Flat 36 on floor 6;⁸¹
- b. Flat 96 on floor 12.⁸²

24.33 After the fire the BRE carried out an examination of the remains of the doors to the flats in the tower in an attempt to determine whether they had been open or closed at the time of the fire and whether the self-closing devices had been present and working.⁸³ In many cases the destruction or degree of damage to the door made it impossible for any conclusion to be reached. In some cases self-closing devices were found and in others they were not, but even where such a device was found it was not possible to decide whether it had been working at the time of the fire. It is possible that a door found by the BRE to have been closed may previously have been open for long enough to allow a significant amount of smoke to enter the lobby. Given the degree of uncertainty that surrounds the evidence contained in the BRE report, it is in my view reasonable to accept the evidence of those witnesses who are able to speak about the condition of their own doors and their actions at the time they left their flats.

24.34 In addition, there is evidence which suggests that the inability of flat doors adequately to resist the spread of smoke was also a factor in enabling the spread of smoke at an early stage. Thus:

- a. FFSs Richard Hippel and Jamal Stern gave evidence that they had seen smoke emerging from around the closed door of Flat 26 on floor 5 during the 10 minutes after 01.19 and Mohammed Rasoul (from Flat 25) also saw dark grey smoke leaking from the sides and foot of the door to the flat at some time between 01.15 and 01.30.

⁷⁵ This was also identified as a likely source of smoke spread by Professor Purser in his Phase 1 report [DAPR0000001] summary at pp. 7-8 section 21(e)-(g).

⁷⁶ Hoang Khanh Quang [IWS00000080] p. 6 section 31 and Day 67/85/9-67/86/24, 67/97/4-20; Van Quang Ho [IWS00000925] p. 5 section 25.

⁷⁷ Nadia Jafari Day 54/14/3-15/6, 54/39/16-21.

⁷⁸ Nida Mangoba supplementary witness statement [IWS00001145] pp. 1-2.

⁷⁹ Hamid Wahbi first witness statement [IWS00001157] p. 6 sections 26 and 55 and Day 62/36/18-37/1, 41/11-42/10.

⁸⁰ Larry Castro first witness statement [IWS00001091] p. 7 section 38.

⁸¹ Oscar Gonzalez first witness statement [IWS00001234] p. 5 section 17; Ramiro Urbano first witness statement [IWS00000496] p. 6 section 24; Claudia Montes first witness statement [IWS00001229] p. 2 section 9.

⁸² Roy Smith first witness statement [IWS00000771] p. 9 section 36 and Day 64/38/13-39/8, 64/43/24-44/9, 64/46/14-47/12, 64/49/13-52/12.

⁸³ BRE Global Client Report dated 20 February 2019 [MET00039807] p. 73 section 5.1.

- b. In a 999 call made at 01.37 Rosemary Oyewole in Flat 113 on floor 14 described smoke coming through her door and in her oral evidence she explained that smoke was “coming from any crack in the door”; both around the frame and through the letterbox.⁸⁴
- c. In a 999 call made at 01.37, Sener Macit in Flat 133 on floor 16 described smoke coming in under the front door.⁸⁵
- d. In a 999 call made at 01.38, a member of the El Wahabi family in Flat 182 on floor 21 said that smoke was coming from the front door. They had put down two blankets to block the smoke and it was not working.⁸⁶
- e. In a 999 call made at 01.40, Denis Murphy in Flat 111 on floor 14 explained that smoke was coming into the flat under the door.⁸⁷
- f. Ann Chance in Flat 73 on floor 10 recalled seeing smoke coming from underneath her front door at an early stage in the night.⁸⁸ In a 999 call at 01.41 she said that smoke was “coming up” and that the door was completely hot.⁸⁹
- g. In a 999 call made from Flat 155 on floor 12 at 01.44 Roy Smith reported smoke coming in around the door, even though he was using wet towels in an attempt to keep it out.⁹⁰

24.35 However, there is evidence which suggests that some flat doors were more effective. For example, the doors of Flat 72 (Antonio Roncolato), Flat 82 (Natasha Elcock) and Flat 165 (Nicholas Burton) appear to have resisted the passage of smoke for some considerable time, which demonstrates the need for caution before assuming that the deficiencies identified by Dr Lane made a difference in all cases. Overall, however, it is safe to say that at least some of the front doors to the flats failed to control the spread of smoke and fire effectively, which allowed smoke to spread in some areas at an early stage. I do not accept the submission made by the TMO that it is not possible to make any assessment of the performance of the doors at this stage.⁹¹ Although it may be necessary to ask the experts to look further into the performance of the front doors of the flats as part of their work in Phase 2, the evidence already available points to the conclusion that their deficiencies contributed to the early spread of smoke in some areas of the tower.

24.36 Firefighting operations undoubtedly played a part as well, because some doors to flats had to be broken down to enable firefighters to gain entry and the use of established firefighting techniques led to the doors to the stairwell being propped open by equipment, including hoses. However, that was limited to the floors on or adjacent to which active firefighting operations were being conducted. For example, on floor 5 FFs Wayne Archer and Thomas Abell forced the door of Flat 26 shortly after leaving the bridgehead at around 01.21. They attempted to fight the fire inside the flat for about 10 minutes, but by the time they left to return to the bridgehead conditions in the lobby were almost as bad as those in the flat. The front door of Flat 16 itself had been forced open as firefighters responded to the initial fire, which could have allowed smoke to spread into the lobby when the fire re-entered the compartment later in the night.⁹² It seems reasonably clear that, where firefighters forced

⁸⁴ [LFB00000678] p. 2 and evidence Day 58/24/22-27/13.

⁸⁵ [LFB00000326] p. 3.

⁸⁶ [LFB00000677] pp. 15-16.

⁸⁷ [LFB00000322] p. 3.

⁸⁸ Ann Chance first witness statement [IWS00000783] p. 4 section 24.

⁸⁹ [LFB00000319] p. 3.

⁹⁰ Roy Smith first witness statement [IWS00000771] p. 12 section 57; [LFB00000324] p. 2.

⁹¹ TMO closing submissions [INQ00000543] p. 8 section 22.

⁹² As noted earlier in this Chapter, Professor Torero has given other examples of such activity including on floors 11 and 12.

entry into flats, or where firefighting equipment such as hoses were being used on different floors, doors were propped open, which enabled smoke to enter areas that had previously been unaffected.

- 24.37 I accept the evidence of Professor Torero and Dr Lane that smoke is more likely to have entered the stairwell as a result of doors from the lobbies being held open than as a result of defects in the doors themselves. The evidence suggests that, in general, those doors performed reasonably well, provided they were kept closed.
- 24.38 It is possible that what Dr Lane described as the “hot zone” between floors 13 and 16 may have been a consequence of firefighting and rescue operations in those areas which involved holding doors open for lengthy periods during rescue attempts, but it is not possible to reach any definite conclusions about when or how those conditions came about. I accept the submission made by Rydon in their closing statement⁹³ that it is difficult to know with any degree of certainty when the hot zone developed.
- 24.39 Many other factors may have played a part in the spread of smoke in the tower, such as the movements of occupants and leakage through the smoke control shafts and vents and other open channels, but it is not possible at this stage to determine the extent to which, if at all, they contributed to the outcome. It is clear from what has been learnt so far that the building suffered a total failure of compartmentation. How the building came to be in that state is the most pressing question to be answered in Phase 2.

⁹³ [INQ00000557] pp. 19-21 section 60-63.

Chapter 25

Developing Conditions within the Building

This chapter provides an overview of the developing conditions of fire and smoke inside Grenfell Tower as experienced by its occupants and the firefighters.

1 Overview of the evidence

- 25.1 This chapter describes the conditions encountered by occupants and firefighters inside the tower as the fire developed. In the Narrative section I have recorded in some detail the available evidence about the developing conditions within the building. Here I seek to draw conclusions from that evidence about the nature of the fire and smoke in key areas of the building, using the Periods into which the Narrative section is divided. My attention has been concentrated principally on conditions in the lobbies and the stairs, since they were the most important areas of the building, both for occupants attempting to leave the tower and for firefighters attempting to fight the fire or carry out rescues.
- 25.2 The spread of fire and smoke created a dynamic situation which evolved rapidly in different ways in different parts of the building and the evidence on which my conclusions are based was inevitably to some degree subjective and imperfect. For example, perceptions of the colour and density of smoke appear to have varied; what appeared very dark and dense to one person appeared lighter and thinner to another. There are no objective criteria by which to measure the density of the smoke encountered by individual witnesses, and the ways in which I describe it in the following paragraphs depend heavily on the impression it made on them at the time. Moreover, conditions appear to have varied, sometimes over very short periods of time, as doors were opened and closed in particular locations. I have tried to describe the conditions inside the building in as much detail and with such confidence as the evidence allows, but it is important to recognise that it will never be possible to identify with precision exactly what they were like at any particular place at any particular time.
- 25.3 The evidence indicates that:
- a. the lobbies on a significant number of floors had started to fill with smoke by around 01.20 or shortly after and that by 01.40 a number had become significantly smoke-logged;
 - b. in the early stages of the fire (before around 01.50) there was a marked difference between conditions in the lobbies and conditions on the stairs; generally, the smoke in the stairs was less dense than in the lobbies, allowing 168 people to escape the tower by 01.50;
 - c. by 02.00 a significant number of lobbies had become heavily smoke-logged, with conditions both in the lobbies and in the stairs continuing to deteriorate thereafter;
 - d. by 01.50 the stairs started to become significantly more affected by smoke, particularly at lower levels and between 02.00 and 02.20 conditions continued to deteriorate to the point at which there was thick smoke and considerable heat at some levels;
 - e. at some time between 02.20 and 02.50 some parts of the stairs were very hot, in some cases hotter than the adjacent lobbies;

- f. although the lobbies and stairs were significantly compromised by smoke and heat by 03.00, 15 people were able to leave the building using the stairs between 03.00 and 03.30; and
- g. some occupants who tried to escape died on the stairs, but throughout the night occupants managed to leave the building by the stairs until 08.07 when the last surviving occupant left the tower.

25.4 Those facts suggest that:

- a. until 01.30, the building was fully passable;
- b. between 01.30 and 01.50 it remained passable, although conditions in many lobbies were becoming more difficult;
- c. after 02.00 conditions in most lobbies and in the stairs deteriorated to the point at which by 02.20 the smoke in the stairs posed a risk to life; and
- d. after 02.20 conditions deteriorated further, but not to such an extent as to create an impassable barrier to everyone who attempted to leave the building after that time.

2 Period 1: 00.54-01.30

25.5 The evidence suggests that between 01.20 and 01.30 some lobbies became significantly smoke-logged while others remained relatively clear of smoke. Thus:

- a. firefighters reported heavy smoke-logging of the lobbies on floors 5, 6, 8, 10, 11, 12, 15 and 16 by around 01.30; and
- b. the evidence of former residents and those who made 999 calls suggests that the lobbies on floors 8, 10, and 12 had become significantly smoke-logged by this time, with at least light smoke also reported in the lobbies on floors 5, 11, 14, 17, 19, 21, 22 and 23.

25.6 The speed at which smoke penetrated particular lobbies varied. The smoke that billowed from the north lift when it reached the ground floor at 01.26 is broadly indicative of the volume of smoke in the lobby on floor 10 when it stopped there during its descent. Smoke is likely to have begun to penetrate floor 10 after 01.20 when the external flame front reached that floor. By 01.22 the external flame front had reached the top of floor 11. The rapid accumulation of smoke in the lobby on floor 10 was sufficient to trap three people (Mohamednur Tuccu, Khadija Khalloufi and Ali Yawar Jafari) in that lobby.

25.7 By contrast, the lobby on floor 7 appeared to be clear of smoke at 01.25.01, when a firefighter can be seen on the CCTV leaving Flat 46, even though the external fire had reached the flat by that time.¹

25.8 By 01.30 the LFB control room had received 28 calls about the fire, of which eight² were from people in various parts of the building, including some near the top and therefore at a considerable distance above Flat 16. Separately four 999 calls from floor 10 and above were put through to the MPS control room, two of which reported smoke coming into flats.

25.9 Although there is some evidence that the stairs were beginning to be affected by light smoke at certain levels by 01.30 and particularly at the level of floors 4 to 5 and above, the weight of the evidence suggests that the stairs were relatively free of smoke during this period and

¹ [INQ00010835].

² The figure does not include call-backs.

that they remained passable to those who wanted to leave. That is supported by the fact that by 01.15, 26 people had left the tower using the stairs and that between 01.15 and 01.30 a further 77 people left the tower in the same way (and a further seven by the lifts). A total of 112 people left the tower between 00.54 and 01.30, of whom 103 left by the stairs and nine by the lifts.

3 Period 2: 01.30-01.40

- 25.10 Between 01.30 and 01.40 conditions in the lobbies continued to deteriorate, with a number filling with smoke. During this period:
- the evidence of the firefighters indicates heavy smoke-logging of the lobbies on floors 5, 8 and 16; and
 - the evidence of former residents and those who made 999 calls (and the video made by Rania Ibrahim) indicates that the lobbies on floors 5, 6, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23 had become significantly smoke-logged. Lighter smoke was reported in the lobbies on floors 7 and 9. Some occupants were able to reach the stairs despite heavy smoke in the lobbies; others were deterred by the conditions from leaving their flats.
- 25.11 Between 01.30 and 01.40 the emergency services received 18 calls from people in the tower, including a number in which occupants reported that they were trapped.³ In particular:
- callers from flats on floor 11,⁴ floor 12,⁵ floor 20⁶ and floor 23⁷ all reported fire and smoke entering either their flats or a flat close by;
 - callers from floor 14,⁸ floor 16,⁹ floor 21¹⁰ and floor 22¹¹ reported smoke coming into their flats from the lobby; and
 - callers from flats on floors 11¹² and 18¹³ said they were trapped by smoke in the lobbies or in the stairs, but that smoke had not actually entered their flats at that time.
- 25.12 Occupants who passed through the stairwell during this period have different recollections of the conditions they encountered. Some recalled there having been no¹⁴ or very little smoke in the stairwell;¹⁵ others described thick smoke.¹⁶ Residents on higher floors who made 999 calls were reporting that they had tried to leave their flats but had found the stairs full of smoke.¹⁷

³ This figure does not include call-backs.

⁴ 01.33.12: Abdeslam Sebbar Flat 81 [LFB00000312].

⁵ 01.38.37: Roy Smith Flat 95 [LFB00000318].

⁶ 01.30.02: Farah Hamdan, Flat 175 on floor 20 [LFB00000314].

⁷ 01.32.10: Biruk Haftom, Flat 155 but on floor 23 [LFB00000667]; 01.38.16: Mariem Elgahry [LFB00000317]; Jessica Urbano Ramirez [LFB00055504] p. 9.

⁸ 01.37.58: Rosemary Oyewole Flat 113 [LFB00000678]; 01.38.18: Zainab Deen Flat 115 [LFB00000321]; 01.40.17: Denis Murphy Flat 111 [LFB00000322] (having already reported smoke entering from the lobby at 01.25.16 [LFB00000308]).

⁹ 01.37.28: Sener Macit Flat 133 [INQ00000280].

¹⁰ 01.38.38: El Wahabi family Flat 182 [LFB00055498].

¹¹ 01.34.50 Hashim Kedir Flat 192 [LFB00000315].

¹² 01.33.01: Natasha Elcock Flat 82 [LFB00000313].

¹³ 01.33.55: Rabia Yahya Flat 152 [LFB00000662].

¹⁴ Jones first witness statement [IWS00000033] p. 8; Nalukwago first witness statement [IWS00000009] section 21; Rasoul first witness statement [IWS00000670] pp. 6-7; Khoudair Day 55/138/1-142/3; Dedrich first witness statement [IWS00000102] p. 9.

¹⁵ Shah Ahmed first witness statement [IWS00000388] p. 11; Wesley Ignacio first witness statement [IWS00000826] pp. 11-12; Daffarn first witness statement [IWS00000169] p. 6; Atmani Day 67/133/15-134/16; Daniels Day 56/70/14.

¹⁶ Rawan Khdeir first witness statement [IWS00000204] p. 4; Mekonnen Day 55/32-38; Mekonnen first witness statement [IWS00000912] p. 3; Castro first witness statement [IWS00001091] p. 8 section 43.

¹⁷ [LFB00000315] and [LFB00000662].

Those who used the stairs moved at different speeds and their impressions of conditions in the stairs could have been affected by factors such as whether a lobby door was open or had been opened recently.

- 25.13 Overall, the evidence of the firefighters, former residents and those who made 999 calls suggests that during this period the smoke in the stairs was thinner than that in the lobbies. All 36 people¹⁸ who left the tower during this period were able to do so safely.

4 Period 3: 01.40-01.50

- 25.14 The overall picture during this period is one of lobbies continuing to fill with smoke, and in some cases starting to have an effect on conditions inside flats. In particular:
- the evidence of the firefighters indicates heavy smoke-logging of the lobbies between floors 4 and 10. The lobby on floor 10 was so heavily smoke-logged that firefighters could not enter it. On floor 20 the smoke in the lobby was such that firefighters' visibility was significantly reduced;
 - the evidence of surviving occupants and the transcripts of 999 calls indicate that the conditions in many lobbies continued to worsen with significant smoke-logging of the lobbies on floors 4, 7, 10, 11, 12, 14, 16, 20, 21, 22 and 23; and
 - the transcripts of 999 calls suggest that a number of occupants on different floors spanning floors 10 to 23 were experiencing smoke coming into their flats through their front doors and sometimes around the windows.
- 25.15 The evidence suggests that conditions on the stairs between 01.40 and 01.50 were generally better than in many of the lobbies and that conditions may have been worse lower down in the building. A number of former residents who gave evidence said that conditions in the stairs had been very different from those in the lobbies during that time. Between 01.40 and 01.50, 20 people left the building.

5 Period 4: 01.50-02.00

- 25.16 The evidence suggests that during this period conditions in the lobbies were variable, with heavy smoke-logging in some and clearer conditions in at least one:
- the evidence of the firefighters suggested that during this period conditions in the lobbies varied; for example, there was heavy smoke-logging of the lobbies on floors 9 and 18, but clearer conditions in the lobby on floor 14; and
 - the evidence of former residents and those who made 999 calls suggested that many of the lobbies were significantly smoke-logged at this time, with particularly heavy smoke-logging on floors 9, 11, 12 and 21.
- 25.17 Of particular note is the fact that people in different parts of the tower were repeatedly calling the control room reporting significantly worsening conditions. A cumulative survey of how particular calls had developed is revealing. For example, Mariem Elgwahry's calls from Flat 205 on floor 23 show that:

¹⁸ This figure includes Joseph John, Leanne Jackson Le-Blanc and their child, whose exits are not recorded on the CCTV footage because they climbed out of a window on the second floor and onto the gated walkway connecting Grenfell Walk.

- a. at 01.30.00, having reached Flat 205 from her own flat on floor 22, there was “smoke everywhere”;¹⁹
- b. at 01.38.16, when she called again there was no smoke in Flat 205;²⁰ and
- c. at 01.54.23, when she called again, Flat 205 was “full of smoke” and they were stuck.²¹

25.18 The El Wahabi family in Flat 182 on floor 21, who had started an hour-long call to CRO Pam Jones at 01.38.38, described worsening conditions throughout the call:²²

- a. in the first few minutes, Abdulaziz El Wahabi described smoke coming into the flat and said that it was “very smoky” on the landing outside. He had discovered that because he had attempted to leave by the stairs but had been forced by the smoke to retreat and because he was able to see the smoke through the spyhole in his front door;
- b. soon after 01.45 he explained that the fire was nearby: “Something is right next door to us. It’s burning, it’s really burning.”; and
- c. at approximately 02.00, the caller said that the fire was in the flat next door and that conditions in their flat were now “really smoky”.

25.19 Roy Smith, who was in Flat 95 on floor 12, also called the control room three times and described deteriorating conditions on his floor:

- a. at 01.38.37, he told CRO Angie Gotts that the fire was spreading and that it was on his floor now and had come through the next-door kitchen. He said: “... It’s started on the 16th floor and it’s just spreading – all the stuff’s flying out of the windows”. He said it was “all smoke” outside;²³
- b. at 01.44.33, he explained to CRO Peter Duddy that there was smoke in his flat and that “the fire embers have started a fire in the flat next door as well. The front – it’s come up through the windows, it’s gone into number 96 Grenfell Tower”. He said the fire was in the kitchen next door;²⁴ and
- c. at 01.54.14, he called a further time and explained to CRO Duddy early on that it was “getting worse”, that he could hear the fire next door through his wall and that there was black smoke in the corridor outside the flat. He then said: “It’s coming in the window now. It’s burning our windows now. It’s like an explosion or something”.²⁵

25.20 The evidence of the firefighters suggests that, during this time, they were concerned about the ability of people to leave safely by the stairs, given the conditions that were being encountered. Their evidence also suggests that the conditions in the stairs were at their worst around floor 4 and bad between floors 4 and 14 (including being hotter and more densely smoke-logged), but improved higher up the tower.

25.21 There is very limited evidence from occupants about conditions in the stairs at this time since no one left the building during this period.

¹⁹ [LFB00000310].

²⁰ [LFB00000317].

²¹ [LFB00000333].

²² [LFB00055498].

²³ [LFB00000318].

²⁴ [LFB00000324].

²⁵ [LFB00055503] p. 3.

6 Period 5: 02.00-02.20

- 25.22 During this period a large number of lobbies were becoming heavily smoke-logged:
- the evidence of the firefighters indicates there was particularly heavy smoke-logging of the lobbies on floors 4, 5, 20 and 21;
 - the evidence of former residents and those who made 999 calls suggests that the lobbies on floors 11, 12, 16, 18, 19, 20, 21, 22 and 23 were all heavily smoke-logged. Less dense smoke was observed on floor 5, 14 and 15 in this period; and
 - NPAS footage taken outside the tower showed that smoke was emerging at floors 12 and 21 from the west face of the building, indicating that there had been two breaches of compartmentation at those levels and strongly suggesting that the lobbies at those levels were smoke-logged.
- 25.23 That conditions in the building fluctuated is illustrated by the evidence of occupants on floors 5 and 14 who recalled there being less smoke in their respective lobbies during this period than they (and other witnesses) had seen at earlier times.
- 25.24 During this period, callers from flats in the north-west and south-west corners of the tower reported significant smoke penetration in their flats:
- at 02.05.22, Isra Ibrahim in Flat 203 on floor 23 reported smoke around her face when she was standing in her living room;
 - at 02.10.33, at an early stage in a call that lasted for 27 minutes and 32 seconds, Sener Macit in Flat 133 on floor 16 described “black smoke” in the flat which was getting worse;²⁶
 - at 02.11.42, Farah Hamdan in Flat 175 on floor 20 reported that there was “loads of smoke” in the flat;²⁷ and
 - at 02.13.03, Nicholas Burton in Flat 165 on floor 19 reported smoke in the whole of his flat.²⁸
- 25.25 In a call at 02.15.07, the eldest son of Karen Aboud calling from Flat 92 on floor 12 reported that conditions in the lobby were so bad that they were trapped and could not leave. He reported that when they had tried to go out they could not breathe.²⁹
- 25.26 During this period, conditions in Flat 192 on floor 22 changed rapidly. In a call at 02.03.47, Hashim Kedir said that there was no smoke in the flat but there was “too much smoke” in the corridor to leave.³⁰ He described being able to see the fire but said that it was not in the property yet.³¹ Seven minutes later, at 02.10.31, the fire had entered the kitchen of Flat 192. Hashim Kedir also described smoke in the flat and said that everyone was coughing.³² When he called again at 02.18.06 Hashim Kedir repeated that there was fire in the flat.

²⁶ [LFB00055499] pp. 4-8.

²⁷ [LFB00000342].

²⁸ [LFB00000344].

²⁹ [LFB00000346] pp. 2-4.

³⁰ [LFB00000339] p. 4.

³¹ [LFB00000339] p. 4.

³² [LFB00000345].

- 25.27 The conditions in Flat 201 on floor 23 also deteriorated significantly during this period. Jessica Urbano Ramirez and Debbie Lamprell reported having difficulty breathing throughout their respective calls with the emergency services. They were sheltering with others in the bedroom of the flat. After describing thick smoke in the bedroom and the fire breaking in, Debbie Lamprell said that the smoke was making others in the bedroom sick. In this period Jessica Urbano Ramirez and Debbie Lamprell both stopped responding before their respective calls ended.
- 25.28 It is clear that during this period conditions in the stairs had deteriorated to the point at which they posed a risk to anyone who attempted to escape. Those survivors who used the stairs during this time spoke of encountering smoke which thickened as they descended and which made breathing difficult. Nicholas Burton struggled to breathe and was assisted all the way down by a firefighter. He described significant heat which increased as he descended to the point at which the handrail became so hot that he could not hold on to it. During this 20-minute period only eight people left the tower, all with the assistance of firefighters.³³

7 Period 6: 02.20-02.50

- 25.29 During this period the overall picture of conditions in the lobbies is one of heavy smoke-logging in a number of lobbies at lower, middle and higher levels of the tower:
- the evidence of former residents and those who made 999 calls suggests that the lobbies on floors 10, 11, 12, 14, 16, 18, 20, 21 and 23 were heavily smoke-logged and a number of those were also reported to be very hot; and
 - at around 02.40 the NPAS helicopter video showed smoke emerging from flats on the west face of the tower at floor 23, indicating that smoke had migrated across the lobby and into west-facing flats at the top of the tower.
- 25.30 Those who managed to leave during this period described thick, black smoke in the stairs as high up as floor 23, with very poor visibility and no light until they had reached somewhere between floors 2 and 4. The stairs are also described as having been very hot during this time, sometimes hotter than the lobbies from which individuals had come. The smoke in the stairs made breathing difficult and caused a burning sensation in the throat and lungs.
- 25.31 During this period 15 survivors left the tower.³⁴

8 Period 7: 02.50-03.00

- 25.32 This is a short period and information relating to it is necessarily limited. However, the evidence suggests a pattern of heavy smoke-logging in a significant number of lobbies, with smoke penetrating many flats:
- the evidence of former residents and those who made 999 calls indicates that the lobbies on floors 10, 11, 12, 15, 21 and 23 were heavily smoke-logged with smoke penetrating many flats beneath or around front doors; and
 - those occupants who made 999 calls during this time (there were 12 from people trapped in the tower during this period) frequently reported significant smoke entering their flats.

³³ Including Milad Kareem who is not shown on the CCTV, but is timed from Rebin Sabir's video as leaving at 02.19.

³⁴ This figure includes Rebin Sabir whose exit on his own video is timed at 02.21.

- 25.33 Smoke conditions everywhere on floors 21 to 23 had become very bad. Occupants trapped on floors 21 and 23 were having difficulty breathing. On floor 22 callers reported that conditions inside flats were so bad that the occupants could no longer see each other.
- 25.34 During this period only one person left the tower.

9 Period 8: 03.00-03.30

- 25.35 The evidence of the firefighters relating to this period indicates that conditions at lower levels of the tower between floors 5 and 11 (and particularly between floors 7 and 11) were generally poor with heavy smoke-logging and greatly reduced visibility. On floors 9 and 10 there was intense heat in the lobbies.
- 25.36 The evidence from 999 and other calls and messages from those in the tower indicates that floors 10, 12, 14, 15, 16, 17, 20, 21, 22 and 23 remained extremely heavily smoke-logged both in the flats and in the lobbies. On floors 7, 11 and 18 the lobbies were also filled with dense smoke.
- 25.37 Those who managed to escape or who attempted to do so during this period described dense smoke in the stairwell. Some described the smoke as varying in density and as being thicker at lower levels. Some said the stairs were hotter on the higher floors of the building.
- 25.38 A total of 16 people left the tower during this period.

10 Period 9: 03.30-04.00

- 25.39 During this period there is evidence from firefighters describing the smoke and heat as worsening as they reached floor 4, with the smoke on floor 5 being so thick that they could not see in front of them.
- 25.40 999 calls from those on floors 15, 16, 22 and 23 indicated that callers were struggling to breathe in flats at those levels. Occupants in Flat 82 on floor 11 and Flat 73 on floor 10 told the LFB that their flats were full of smoke.
- 25.41 CCTV footage from the lobby of floor 7 shows that it became completely smoke-logged during this period.³⁵
- 25.42 Those who entered or looked into lobbies on floors 10, 11, 15 and 16 during this period consistently described thick, black smoke; some also described intense heat.
- 25.43 The few occupants who managed to escape during this period, principally from floors 15, 16 and 21, described intense heat on the stairs. Some said there was little difference between conditions in the stairs and conditions in the lobbies and in some cases that conditions in the stairs were worse. All described thick, black smoke in the stairwell. Some occupants said that conditions improved at around floors 8 to 10 and below.
- 25.44 During this period nine people successfully escaped from the tower.

³⁵ 03.00.20 (corrected from 03.01.00) [INQ00010923]; 03.34.59 (corrected from 03.35.39) [INQ00010925]; 03.36.05 (corrected from 03.36.45) [INQ00010924].

11 Period 10: 04.00-05.00

- 25.45 By 04.00 occupants on floors 10, 11 and 14 were still in contact with the control room or with friends and family outside the tower, but there was no further contact with occupants above floor 14.
- 25.46 Those survivors who were able to give evidence about conditions in the lobbies during this period described thick, black smoke on floors 10 and 11 and significant heat.
- 25.47 Some described conditions in the stairs as similar to those in many of the lobbies, particularly at the level of floors 8 and above. Others described the conditions as better in the stairs than in the lobbies. Video evidence shows visible smoke in the stairwell below floor 10 which clears lower down.³⁶
- 25.48 Nine people from floors 10 and 11 escaped from the tower during this period.

12 Period 11: 05.00-08.10

- 25.49 There is limited evidence from survivors of the fire about conditions within the building during this period, but there is some evidence from firefighters, particularly about conditions in floors 5 to 13. It is clear that conditions at these lower levels were extremely poor and that some of the lobbies were very hot. In particular:
- firefighters described thick smoke in floors 5 and 6 and above, with thicker and heavier smoke in floors 8 and above;
 - firefighters also described the lobbies at floors 11 to 13 as being hot and full of dark smoke. Floors 5 and 10 to 13 were described as particularly hot. On floor 11 a thermal imaging camera registered a temperature of 1000°C; and
 - several firefighters described significant quantities of water pouring down the stairs during this period.
- 25.50 Firefighters described conditions in the stairs above floor 4 as poor, with visibility of no more than 6 feet on floor 10.
- 25.51 Antonio Roncolato on floor 10 said that the temperature was very hot in the lobby, but cooler on the stairs where there was water.
- 25.52 Two people escaped from the tower during this period.

³⁶ [INQ00010922]; [INQ00010921].

Chapter 26

Compliance with Building Regulations

1 Non-compliant facade: functional requirement B4(1)

- 26.1 It is apparent from the findings made in earlier chapters that the external walls of the building did not resist, and indeed actively promoted, the spread of fire. That was principally due to the presence of ACM panels with a polyethylene core, but other materials and other features, including the design and geometry of the facade, also played a role.
- 26.2 A group of core participants¹ submitted that the construction of the Building Regulations 2010 is ultimately a question of law which I can decide at this stage of the Inquiry. They argued that there is clear evidence that the facade did not meet functional requirement B4(1) of Schedule 1 to the Building Regulations,² which requires the external walls of a building “to adequately resist the spread of fire over the walls ... having regard to the height, use and position of the building”.
- 26.3 Both Dr Barbara Lane and Professor Luke Bisby have expressed the view that functional requirement B4(1) was not met³ in this case and a number of core participants, including RBKC,⁴ C. S. Stokes⁵ and Kingspan,⁶ have accepted that that was the case.
- 26.4 Although it was not originally my intention to reach conclusions in Phase 1 about the tower’s compliance with the Building Regulations, I can see no good reason why that question should not be determined now so far as it relates to the external facade. I accept that the construction of the Building Regulations is ultimately a question of law and there is compelling evidence that requirement B4(1) was not met in this case. It would be an affront to common sense to hold otherwise. Although in another context there might be room for argument about the precise scope of the word “adequately”, it inevitably contemplates that the exterior must resist the spread of fire to some significant degree appropriate to the height, use and position of the building. In this case, whether one considers the rainscreen panels alone or the cladding system as a whole, or even the complete external envelope, including the original concrete structure, it is clear that the walls did not resist the spread of fire. On the contrary, they promoted it, as can be seen in the video recordings of the rapidly developing fire which engulfed the building in just over 2.5 hours.
- 26.5 In addition, I accept that the cladding of the external walls constituted “building work” within the meaning of regulation 3 of the Building Regulations, because it involved a “material alteration” of the building which resulted in its ceasing to comply with requirement B4(1).⁷ In

¹ Represented by the solicitors Bhatt Murphy, Bindmans, Hickman & Rose, and Hodge, Jones & Allen [BSR00000004].

² G4 BSR closing submissions [INQ00000563] p. 11 section 2.30 and p. 24 section 2.80.

³ Dr Lane supplemental report [BLAS00000002] p. 15 section 2.9.8; [BLAS00000011] p. 96 section 11.23.7(b), p. 97 section 11.23.12 and oral evidence Day 79/109/21-110/8; Professor Bisby [LBYS00000001] p. 152 section 748-750 and oral evidence Day 78/157/23-158/9.

⁴ Oral opening statement 6 June 2018 Day 3/94/15-21; written opening statement [RBK00026858] p. 5 section 19; Phase 1 closing statement [INQ00000553] p. 3 section 10.

⁵ Closing statement [INQ00000568] p. 10 section 38.

⁶ Phase 1 closing submissions [INQ00000565] pp. 3-4 section 2.1.

⁷ Regulation 3(1)(c) and 3(2)(a) of the Building Regulations.

particular, before the fire, the exterior walls of the building, being constructed of concrete, complied fully with that requirement, since concrete does not support combustion, but that changed fundamentally when the cladding system was added during the main refurbishment.

26.6 Arconic alone submitted that I should not at this stage of the Inquiry make any findings about the compliance of the external walls of the building with the Building Regulations. In paragraph 19 of its closing statement it submitted that certain aspects of Dr Lane's evidence went beyond the scope of Phase 1, including Appendix O of her supplemental report, in which she expressed certain views about the Certificate for Reynobond Architecture Wall Cladding Panels issued by the British Board of Agrément (BBA) in 2008. However, although the questions she has raised may have a bearing on whether the ACM panels reflected the guidance given in Approved Document B, they have no bearing on whether functional requirement B4(1) of Schedule 1 to the Building Regulations was met. In circumstances where Arconic does not, and could not sensibly, dispute the rapidity and extent of the spread of fire over and around the building (and indeed in its closing statement put forward a number of mechanisms by which it says that could have occurred⁸), I can see no rational basis for contending that the external walls of the building met requirement B4(1), whatever the reason for that might have been. There is therefore no good reason for deferring to a later report what is no more than a self-evident conclusion. For the same reason I do not think there can be any unfairness in stating that conclusion at this stage. If any of the core participants had put forward a reasoned argument to the effect that the exterior walls of the building complied with requirement B4(1), the position might be different, but none has sought to do so. I think it is right therefore that I should say at this stage that on completion of the main refurbishment the external walls of the building did not comply with requirement B4(1) of Schedule 1 to the Building Regulations.

26.7 A separate question is how those responsible for the design and construction of the cladding system and the work associated with it, such as the replacement of the windows and infill panels, satisfied themselves that on completion of the work the building would meet requirement B4(1). That is a matter for investigation in Phase 2. Dr Lane has expressed certain views on some aspects of that question in her supplemental report, but it is a question which I have yet to consider and on which there is still much evidence to be obtained. It may also be a question on which various core participants may wish to address me. It would therefore not be right for me to express any view about it at this stage.

⁸ Closing submissions [INQ00000558] pp. 16-20 sections 71-93, in particular sections 71, 82, 88, 93.

Chapter 27

Planning and Preparation

This chapter considers the preparations made by the LFB for recognising and responding to the risk of fires in the external envelopes of high-rise residential buildings.

1 Generic Risk Assessment 3.2

27.1 The purpose of Generic Risk Assessment (GRA) 3.2 was to assist fire and rescue services in drawing up their own assessments of risk to meet their statutory obligations under the relevant Health and Safety at Work legislation. It recommended that contingency plans should be drawn up for individual premises, which should cover the spread of fire beyond the compartment of origin, the possible need for multiple rescues and the need for an operational evacuation plan in case “stay put” became untenable. It follows that fire and rescue services were expected to provide those who might become incident commanders at fires in high-rise buildings with training in evacuation and casualty removal tactics, as well as training to enable them to recognise when a full or partial evacuation has become necessary.

27.2 GRA 3.2 covers a substantial amount of ground relevant to the LFB’s knowledge of the risks at Grenfell Tower and their operations on the night of the fire itself which are examined elsewhere in this report. For present purposes, it clearly contemplated that total evacuation of a high-rise building should be an important part of any fire and rescue service’s contingency plan for such a building. I refer to pages 15, 16, 17, 19-20, 27, 29 and 49 of GRA 3.2. I need only quote three passages.

a. Page 17:

“Contingency plans for particular premises should cover:

- fire spread beyond the compartment of origin and the potential for multiple rescues
- an operational evacuation plan being required in the event the “Stay Put” policy becomes untenable

...

- alternative communication arrangements to overcome any radio ‘blind spots’”

b. Pages 19-20:

“Training, which will cover high rise incidents must include:

...

- Evacuation and casualty removal tactics. Incident Commanders should understand when a partial or full evacuation strategy might become necessary in a residential building where a “Stay Put” policy is normally in place.”

c. Page 29:

“The advice offered to callers to remain in their property during fire survival guidance calls must be re-evaluated throughout an incident. Where circumstances make it necessary, an Incident Commander may need to consider changing the advice given. For example, callers may need to be advised to leave their property or to be guided from it by firefighters. The Incident Commander should also consider making use of all available systems within the building to communicate with occupants.”

- 27.3 It is quite plain that, as a matter of national policy and guidance, a fire and rescue service is obliged to ensure that it has contingency plans in place for the partial or full evacuation of high-rise buildings in its area in the event that the “stay put” strategy becomes untenable. It follows that fire and rescue services, and incident commanders in particular, cannot take it for granted that the building is adequately compartmented in accordance with the Building Regulations and that therefore the standing “stay put” advice will hold reliably. Nor can they justify failing to consider a full or partial evacuation on the grounds that the building will not enable it to be accomplished successfully. On the contrary, fire and rescue services are required to understand, of any given high-rise building in their area, when a partial or full evacuation might become necessary and to provide training to incident commanders in evacuation and casualty removal tactics.

2 LFB Policy No. 633

- 27.4 The GRA 3.2 is national guidance from which local fire and rescue services derive their own policies. As I have explained elsewhere in this report, PN633 is the LFB’s policy for high-rise firefighting.
- 27.5 In its approach to the “stay put” principle and the question of contingency planning for the evacuation of a high-rise building, PN633 is neither as clear nor as extensive as GRA 3.2 (and certainly does not mirror its provisions exactly). In particular, it does not spell out what LFB officers should do to prepare and initiate a contingency plan for evacuation. However, it clearly does envisage that evacuation of a high-rise residential building may be necessary. In particular:
- a. Appendix 1 requires that during visits to premises carried out pursuant to section 7(2)(d) of the FRA officers must ensure that they are familiar with a long list of matters and their impact on firefighting and search and rescue operations. One of those items is “evacuation arrangements which may include phased evacuation”.
 - b. The section entitled “Evacuation” provides:

“7.45 The IC should consider following the evacuation plan devised as part of the occupier’s fire risk assessment unless the fire situation dictates otherwise.

7.46 It may be necessary to undertake a full or partial evacuation in a residential building where a “Stay Put” policy is normally in place.

7.47 ... The IC should consider:

 - (a) the effect of firefighting tactics on evacuation (and vice-versa);
 - (b) the resources required to support the evacuation.”
 - c. The section entitled “Fire Survival Guidance” provides:

“7.51 The advice offered during fire survival guidance calls should be re-evaluated throughout an incident and this may require a change in the advice given. In exceptional circumstances an IC may consider informing control that their advice to FSG callers should be altered, e.g. to attempt to leave their property. The IC should remember that this advice may be contrary to national policy for control staff on FSGs and liaison with the officer in charge at control will be required for agreement to change the prescriptive advice.”
- 27.6 One major weakness of PN633 is that, although it refers to a potential need to evacuate a building to which a “stay put” strategy applies (paragraph 7.46), it does not make it clear to incident commanders that the existence of such a strategy should not deter them from undertaking a full or partial evacuation if the behaviour of the fire justifies it. Another is that it does not require any contingency planning for evacuation to be undertaken or give

any guidance to incident commanders on how to go about carrying one out. Despite those weaknesses, PN633 proceeds on an assumption that compartmentation may fail and that under those circumstances an incident commander must be prepared to carry out a full or partial evacuation.

27.7 Paragraph 4.8 of PN633 deals with particular aspects of planning and preparation for fighting fires in high-rise buildings. It says:

“4.8 The tactics and resources required to mount safe rescue and fire fighting operations should be assessed, practised and confirmed where necessary for the building concerned. This may include the following considerations:

(a) Planning for fire spread beyond the compartment of origin and the potential for multiple rescues. . .

4.10 . . . Premises evacuation procedures and their impact on firefighting tactics should be considered as part of 7(2)(d) visits . . .”

27.8 There were no tactical or contingency plans for the evacuation of Grenfell Tower. No satisfactory reason for that significant omission was given but a partial explanation may lie in the absence from PN633 of any reference to the need for an operational evacuation plan if “stay put” became untenable.

3 The LFB’s knowledge of cladding fires

27.9 The absence of an operational evacuation plan was a major omission in the LFB’s preparation for a fire at a building such as Grenfell Tower, but, since there was no attempt to carry out a managed evacuation of the building, it is less significant than the absence of any training for incident commanders in how to recognise the need for evacuation. That absence in turn reflects a failure to recognise the risk of fire taking hold on the outside of modern buildings. Several LFB witnesses said in one way or another that they did not understand what was happening as the fire spread up the building and that buildings “should not behave like that”. That reflected a failure to educate firefighters in the dangers associated with combustible cladding systems.

27.10 That failure is surprising, given the long history of fires involving cladding on high-rise buildings both in this country and abroad, a history of which some senior figures within the LFB were aware. The risks of fire breaking out in external cladding have been known in the UK since at least 1991, when a fire at Knowsley Heights, an 11-storey block of flats on Merseyside, spread vertically up the building’s entire face within the cavity behind the rainscreen, but without penetrating the interior of the building.¹

27.11 On 11 June 1999 a fire broke out at Garnock Court, a high-rise residential building in Irvine, Ayrshire. It spread externally through spandrel panels below windows and up a strip of wall from floors 5 to 13.² As a result of the fire, a Parliamentary Select Committee investigated the risks arising from cladding systems and the extent to which they were subject to regulation. The Select Committee recommended that all external cladding systems should either be made of non-combustible materials or shown not to present an unacceptable risk of fire spread.³ Thereafter, in 2000 certain amendments were made to Part B of Schedule 1 of the Building Regulations and Approved Document B.

¹ Refer to paragraph 2.40 of Colin Todd’s report (dated 2018) [CTAR00000001] p. 13.

² Refer to paragraphs 2.45-2.49 of Colin Todd’s report (dated 2018) [CTAR00000001] p. 14.

³ First report: The Environment, Transport and Regional Affairs Committee “Potential Risk of Fire Spread in Buildings via External Cladding Systems” <https://publications.parliament.uk/pa/cm199900/cmselect/cmenvtra/109/10907.htm>

- 27.12 From 2012 onwards, there were more fires involving cladding systems on high-rise residential buildings, some abroad and some in the UK. Some of those fires were discussed in a presentation, entitled *Tall Building Facades*, apparently prepared by the LFB's Fire Safety Regulation department in the latter quarter of 2016, although dated 13 July 2016.⁴ One of the fires discussed in the presentation occurred at Shepherd's Court in Shepherd's Bush, London in August 2016. It had started in the kitchen of a two-bedroom flat on floor 7 and spread rapidly up the facade to floor 11. The LFB's response involved 20 appliances, one ALP, five water jets and the deployment of BA crews. The general conclusions of the *Tall Building Facades* slide presentation provide a useful indication of the lessons that had been learnt from recent fires, including that at Shepherd's Court:⁵

"As a **general principle** the external envelop [sic] of the building **should not contribute** to the fire spread along the façade.

New construction material and method of construction are being used in facades and with a **limited understanding** of their **fire behaviour**/performance.

There is a **need to understand**:

- What products are being used in the façade system and their fire behaviour; and
- If they are used appropriately and meet the relevant guidance.

These could affect the way fires develop and spread in a building." [Original emphasis]

- 27.13 Following the fire at Shepherd's Court, in May 2017 AC Dan Daly, then Head of the LFB's Fire Safety Regulation department, wrote to the Chief Executives of all London boroughs.⁶ The letter was headed "Tall Buildings – External Fire Spread" and made three essential points. First, as a result of certain recent incidents, the LFB had found that the level of fire protection provided by the external surfaces of tall buildings did not comply with the requirements of Part B of the Building Regulations in terms of limiting the speed at which fire could spread externally. Secondly, testing of the external panels following the Shepherd's Court fire had disclosed that they did not satisfy the requirements of the Building Regulations in terms of combustibility. Thirdly, Chief Executives should consider carefully their arrangements "for specifying, monitoring and approving all aspects of future replacement and improvement to building facades and construction of new buildings". In relation to buildings within local authorities' control, AC Daly encouraged Chief Executives to think about including in their risk assessment processes consideration of the extent to which external panels complied with the Building Regulations. In his concluding remarks, AC Daly said that:

"where no reliable information is available for a given property, it is our general expectation that a strategy to assess the risk and where necessary implement short, medium and long term actions to address the risk [sic]. This assessment will need to take account of other fire safety measures already in place in the building as well as potential mitigation measures to ensure that any potential fire spread does not pose a risk to health and safety."

- 27.14 Notwithstanding this history of fires involving cladding systems, the LFB's experience and assessment of the Shepherd's Court fire in August 2016 and the letter to the Chief Executives of the London boroughs, very few (if any) of the incident commanders or senior officers who attended the fire at Grenfell Tower were aware of the risks posed by exterior cladding. Certainly, none of them had received any training in recognising or assessing risks of that kind or in the steps that should be taken in response to a fire in the envelope of a high-rise building. Even the Commissioner herself, who had been in charge of Safety and Assurance at

⁴ [LFB00003521].

⁵ [LFB00003521] p. 25: the emboldening is in the original text.

⁶ [LFB00000224].

the LFB at the time of the production of the *Tall Building Facades* slide presentation in 2016, admitted that she was unfamiliar with it at the time of the Grenfell Tower fire.⁷ She could not explain why its circulation had been limited to a small group of fire engineers.⁸ Her response was that nobody would expect an incident like Grenfell Tower to occur or a building to be covered in such a highly flammable product and to fail so spectacularly.⁹

- 27.15 It is also clear from the terms of AC Daly's letter that the LFB could not safely assume that external cladding complied with the relevant requirements of the Building Regulations.

4 Training

- 27.16 Furthermore, despite the clear terms of paragraphs 4.8, 4.10 and 7.45-7.47 of PN633, which envisaged a potential need to evacuate a high-rise building subject to a "stay put" policy, there is no evidence that any of the officers who attended the fire (with perhaps one exception) had received any training in the principles of evacuation, how to decide whether evacuation was necessary or how to carry it out safely and efficiently.
- 27.17 Despite the terms of GRA 3.2, the relevant paragraphs of PN633, the contents of the *Tall Building Facades* slide presentation and AC Daly's letter, the LFB's basic attitude to planning for the evacuation of high-rise buildings was summed up by the Commissioner in her oral evidence. She said that although cladding fires were a known and material risk to high-rise residential buildings, in which fires could behave unpredictably, the LFB would not develop a training package to respond to "something that simply shouldn't happen", or as she put it more graphically, "for a space shuttle to land on the Shard".¹⁰ That evidence betrayed an unwillingness to confront the fact that by 2017 the LFB knew (even if she personally did not) that there was a more than negligible risk of a serious fire in a high-rise building with a cladding system. The evidence also revealed a reluctance to accept that there was a risk that a fire of this kind and scale might occur in any building that had been provided with exterior cladding. Although the wholesale failure of every layer of fire safety in the building may not have been reasonably foreseeable by the LFB, the risks of rapidly developing facade fires in high-rise buildings and a consequent deluge of FSG calls were well known to the LFB in June 2017. The question why that knowledge had not informed relevant policies (pre-eminently PN633), training and operational procedures and practice will be considered in Phase 2.
- 27.18 The Commissioner went on to say that, even if the incident commanders had known about these risks and had understood the nature of the fire when it was in its early stages, that would not have made any difference, since it was always incapable of being extinguished.¹¹ However, I have no doubt that to have known what he was facing once the fire had broken out of Flat 16 would have assisted WM Michael Dowden and those who succeeded him as incident commander in assessing the need to evacuate the building and formulating an appropriate strategy, even if its execution had presented serious challenges.
- 27.19 There is one final point which arises in relation to the LFB's knowledge of the risks posed by cladding. GRA 3.2 includes cladding among the things to be examined on a visit under section 7(2)(d) of the Fire and Rescue Services Act 2004. The Commissioner explained the absence from Appendix 1 to PN633 of any reference to cladding by suggesting that at the time it was not perceived to be a risk.¹² If she is correct, that suggests that the LFB did not

⁷ Cotton Day 50/47/2-14.

⁸ Cotton Day 50/51/7-20.

⁹ Cotton Day 50/51/7-20.

¹⁰ Cotton Day 50/51/21-52/11.

¹¹ Cotton Day 50/52/12-53/10, 62/21-64/4.

¹² Cotton Day 50/40/20-41/1.

become aware of cladding as a risk which deserved attention in a section 7(2)(d) visit until after June 2015, when latest version of PN633 was produced. That in turn raises the question why it was perceived to be a risk at national level but not in London. This question will require investigation in Phase 2.

- 27.20 The failure to train firefighters in how best to fight cladding fires was the inevitable consequence of the LFB's institutional failure to inform its firefighters about the risks they present. That failure to train is usefully illustrated by the actions of the first four crews which attended the fire. The members of these crews were all experienced firefighters. WM Dowden had joined the LFB in June 2003 and, at the time of the fire, had been a Watch Manager (whether in a temporary or substantive rank) for some seven years.¹³ WM Brien O'Keeffe joined the LFB in 1993 and had been a Watch Manager for six or seven years at the time of the fire.¹⁴ Similarly, CMs Charles Batterbee, David Davies, Christopher Secrett and Jamal Stern had a combined service of 52 years as firefighters. Notwithstanding their experience, none had received any training on the risks posed by exterior cladding or the techniques to be deployed in fighting fires involving cladding. None had received any training in when to withdraw "stay put" advice or how best to evacuate residents from high-rise buildings. None had seen or had received training on the *Tall Building Facades* slide presentation.¹⁵ The training provided to the first four crews (including, in particular, the first incident commander, WM Dowden) did not adequately prepare them for the nature, speed and ferocity of the fire they faced.

5 Section 7(2)(d) visits to Grenfell Tower before the fire

- 27.21 The failure to appreciate the nature of the risks posed by the cladding at Grenfell Tower was due in part to the approach adopted by the LFB to the discharge of its obligations under section 7(2)(d) of the 2004 Act. That provision required the LFB to make arrangements for obtaining information needed for the purpose of extinguishing fires and protecting life and property in the event of fires in Greater London.
- 27.22 The LFB sought to discharge this duty by sending fire crews to inspect buildings in the areas of individual fire stations. Appendix 1 to PN633 contained a list of things to be inspected on these visits. Paragraph 1 provided that:

"During 7(2)(d) visits personnel should ensure they are familiar with the following and their impact on firefighting and search and rescue operations."

There followed a list of 22 matters which reflected many of those identified in GRA 3.2. The language of the opening sentence indicated that what followed was not by way of mere guidance but was mandatory. In this context "should" means "must".

- 27.23 The following matters identified in paragraph 1 of Appendix 1 are particularly relevant:
- the location and accuracy of information available on the site;
 - the location and availability of water supplies;
 - hydrant locations and size of main;
 - location and function of firefighting lifts;
 - the likelihood and impact of any fire spread beyond the compartment of origin and the potential for multiple rescues;

¹³ Dowden Day 9/4/11-5/13.

¹⁴ O'Keeffe Day 17/125/6-126/24.

¹⁵ [LFB00003521].

- occupancy and use profile;
- floor layouts and any building construction features which may promote rapid or abnormal fire spread;
- plans to show flat number, by floor and in relation to each other;
- means of ventilation and smoke control including the location of operating switches;
- fire-engineered solutions within the building design;
- potential communication problems;
- identification of areas that would be suitable as rendezvous points and appliance marshalling.

The list culminated in the advice that:

“These points should also form the basis and be included as part of any site-specific plan that is necessary.”

Again, in this context “should” means “must”.

27.24 The Commissioner said that no training was given to firefighters in how to go about conducting a visit.¹⁶ That much was clear from the evidence of firefighters, not only of those from North Kensington fire station who had carried out section 7(2)(d) visits to Grenfell Tower, but others as well. She, in common with other firefighter witnesses, also expressed scepticism about how realistic it was to expect frontline firefighters (who are usually no more senior than Watch Managers) to undertake the lengthy survey of the numerous different fire safety aspects of a high-rise building set out in Appendix 1 to PN633. The Commissioner described many of the aspects of the building which the policy requires them to examine during a visit as “incorrect” and “not realistic.”¹⁷ If that is so, it is not clear how the LFB came to produce such a flawed policy. This issue will be investigated further in Phase 2 together with two other points arising from the evidence: first, what type of information and in what detail needs to be gathered under section 7(2)(d) to ensure the effective performance by the LFB of its duty under section 7(1), and, secondly, to what extent does PN633 and the LFB’s training and practice ensure that such information is properly gathered in relation to high-rise buildings.

27.25 Although the language of paragraph 1 of Appendix 1 requires personnel to familiarise themselves with all the listed matters, it is equally clear that as a matter of practice LFB officers conducting visits did not consider all of them but tended to concentrate on those relating to the particular cause or event that had prompted the visit. In relation to Grenfell Tower, although the local fire station (in this case North Kensington) was aware of the nature and extent of the refurbishment project, there was no attempt to carry out a visit which comprehensively addressed each of the listed matters to ensure that the information relating to the refurbished building and the assessment of the risks it presented was accurate and up to date. It is a cause for concern that, although the station managers at North Kensington fire station were aware of the scale of the refurbishment being carried out on the tower, and on one occasion shortly before the completion of work met one of the managers of Rydon Maintenance Ltd on site, no good explanation was given for the failure to carry out a comprehensive assessment of the tower after the refurbishment had been completed.¹⁸

¹⁶ Cotton Day 50/40/15-19.

¹⁷ Cotton Day 50/84/14-86/2.

¹⁸ Ricketts Day 51/84/5-19.

- 27.26 WM Dowden and his crew, and others from North Kensington who conducted section 7(2)(d) visits to the tower, had received no training on how materials used in exterior facades might behave in fires and could not be expected to assess the risks created by the cladding system or how they might relate to other aspects of the building's fire safety measures. That is not something for which they can be blamed. It is equally plain, however, that they had been given no training in the evacuation of high-rise buildings generally, or in how to recognise the need to evacuate such a building or how to carry out such an operation safely. These failings were institutional in nature and no personal criticism can be made of WM Dowden or any other firefighter who visited the tower before the fire.
- 27.27 In this respect the LFB as an institution failed to implement the requirements of GRA 3.2 and PN633 by failing to train frontline officers in how to carry out proper section 7(2)(d) inspections. One question which arises in light of developments in construction techniques and practices is whether, and if so to what extent, section 7(2)(d) visits should be conducted by suitably qualified professionals in addition to fire crews. That issue will be examined at Phase 2.
- 27.28 However, most of the matters identified in Appendix 1 to PN633 were well within the experience and knowledge of rank and file officers. The North Kensington crews who carried out section 7(2)(d) visits to the tower before the fire failed to identify and correct inaccuracies in basic information relating to the tower itself (for example, that it had 25, including the basement, not 20, floors); they also failed to identify and make good deficiencies in the LFB's information, such as the absence of basic floor plans showing flat numbers and floor layouts. Presumably, such plans could have been easily provided by the TMO to North Kensington fire station in paper form or by email, but no determined effort appears to have been made by the LFB to obtain them. No concerns appear to have been raised during visits made before the fire about the absence of any tactical or contingency plans for evacuation. Nor was any attempt made to ensure that emergency contact details were kept up to date. There is no reason why that information could not have been routinely provided by the TMO to North Kensington fire station as the need arose.
- 27.29 Inevitably the question arises whether the cancelled practice drill at the tower that was due to take place on 8 June 2017, six days before the fire, would have revealed the inaccuracies and omissions in the LFB's information relating to the building. However, bearing in mind the previous failures to identify incomplete and inaccurate information about the tower and the narrow approach adopted in practice to section 7(2)(d) visits by North Kensington fire station (as well as crews from many other fire stations in relation to buildings within their areas), I think it unlikely. That serves to support my concern that section 7(2)(d) visits, as presently conducted by the LFB, are not fulfilling the purpose for which they are designed, namely to collect information that allows the LFB to extinguish fires and to protect life and property.

6 Section 7(2)(d) visits and the Operational Response Database

- 27.30 The purpose of section 7(2)(d) visits is to gather accurate information that will allow the fire and rescue service (in this case the LFB) to extinguish fires and to protect life and property. The information collected by the LFB during those visits is to be recorded on the ORD, so that if a crew is despatched to a fire at a high-rise building, it has the basic information about the building to enable it to fight the fire. As indicated above, the ORD entry for the tower dated 15 February 2017, which was available to crews attending the fire, contained minimal, and

in places inaccurate, information about the tower itself and no tactical plan for fighting the fire.¹⁹ In summary:

- a. There were no plans of the tower on the ORD, despite the fact that under the “earlier visit comments” for 10 May 2015 SM Nicholas Davis had noted: “plans are required for MDT”.²⁰
- b. The only photograph of the tower was a small aerial image which gave no information about the building or access to it.
- c. The number of floors in the tower was incorrectly recorded as 20.
- d. Under the overall heading “Tactical plan” the subheading “Operational contingency plan” contained simply a blank box dated 30 October 2009. As the Commissioner accepted in her evidence, no detail was provided of the objective or the basic elements of the tactical plan.²¹ There simply was no operational contingency plan.
- e. The emergency contact details were out of date and related to individuals involved in the refurbishment, which had been completed in 2016.

27.31 After the fire, the LFB conducted a Performance Review of Command (PRC), which considered, amongst other things, the quality of command decisions on the night and the adequacy of the information available to incident commanders and monitoring officers.²² The PRC concluded (and the Commissioner agreed)²³ that the information available to WM Dowden was insufficient, particularly in relation to the tactical plan and floor plans of the tower.²⁴ Each of these deficiencies in the tower’s ORD rendered it woefully inadequate, as the Commissioner rightly accepted.²⁵ Cumulatively they were inexcusable, and indeed no LFB officer who gave evidence about them sought to defend them.

27.32 On the night of the fire AC Andrew Roe was particularly exercised by the absence of any plans of the tower until very late in the incident. Had the LFB maintained a proper ORD for, and ensured that the TMO had provided it with plans of, the tower, AC Roe would not have had cause to complain on that score. It will be a matter for Phase 2 exactly what efforts the LFB made with the TMO to obtain plans and what efforts the TMO made to provide them during the two years before the Grenfell Tower fire in which their absence had been noted.

27.33 The question then arises whether and, if so, to what extent, the deficiencies in the ORD and the absence of plans hindered effective command decision-making, the deployment of search and rescue crews and the firefighting response more generally. In relation to the response to the initial fire in the kitchen of Flat 16, there is no evidence that the deficiencies in the ORD had any effect at all on the speed or effectiveness of the response. In relation to the response to the catastrophic fire in the cladding that ensued, undoubtedly it would have assisted incident commanders, those in charge of the bridgehead and the crews deployed to search for and rescue residents to have had accurate drawings of the floor layout and an accurate statement of the number of floors. It would also have helped to have had up-

¹⁹ [LFB00003116].

²⁰ MDT (the Mobile Data Terminal) [LFB00003116] p. 1.

²¹ Cotton Day 50/89/1-4.

²² A PRC is held for all incidents involving six or more pumps. Its purpose is to provide a constructive and supportive environment within which the performance of command function can be discussed openly. The objectives are to identify good practice and points for improvement: refer to LFB PN421 “*Performance reviews of the Command Function*”, paragraphs 2.1 and 2.2 [LFB00001563].

²³ Cotton Day 50/91/10-13, 50/92/17-93/5.

²⁴ [LFB00003121] point 3, and the IMP Report [LFB00003114].

²⁵ Cotton Day 50/92/17-93/5.

to-date emergency contact details for a caretaker or someone else who knew not only the tower but also the residents and which ones were vulnerable or had children. However, there is no reliable evidence to suggest that the inaccurate and incomplete information materially hindered the firefighting and rescue efforts.

- 27.34 It is worth noting that the London Safety Plan published by the LFB on 31 March 2017²⁶ made a virtue of the presence of premises information plates in high-rise residential buildings in the following terms:

“From previous consultations, London Fire Brigade also knows that some people may still feel vulnerable from fires in high-rise buildings. The Brigade understands this concern and that is why it is one of the key concerns captured in the assessment of risk toolkit. The London Fire Brigade would like to reassure Londoners that it has effective measures in place for dealing with incidents in high-rise buildings and this includes a pre-determined attendance of four fire engines to any high-rise incident. **The Brigade has also developed premises information plates for residential high-rise buildings, which provide vital information about layout, dimensions, dry riser outlets, hydrant locations and whether the building has any lifts. These are available electronically to crews, enabling firefighters to familiarise themselves with the building while on route and to get to work quickly on arrival.**” [Emphasis added]

- 27.35 In the light of the evidence of the lack of information available to the LFB crews attending Grenfell Tower on the night of the fire, these words will provide scant comfort to any Londoner. There is no legal obligation on a building owner or manager to provide a premises information box or plate and according to AC Roe they are not common in high-rise buildings.²⁷ How it came about that RBKC and the TMO failed to provide the LFB with even a fraction of this information, and that the LFB failed to demand it of them and ensure that the ORD reflected it, is a matter of the utmost seriousness. That question will be examined at Phase 2.
- 27.36 The failure to appreciate the nature of the danger at Grenfell Tower was due in part to the LFB’s narrow understanding of section 7(2)(d) of the 2004 Act. The subsection is couched in general terms (“... a fire and rescue authority must in particular ... make arrangements for obtaining information needed for the purpose mentioned in subsection (1))”, that purpose being extinguishing fires in its area and protecting life and property in the event of fires in its area. There is an obligation to gather relevant information in respect of all matters falling within the scope of the subsection from wherever it may be found (as indeed is recognised by PN800). That may well include the owner or manager of the building in question. Such information includes, but is not limited to, the matters listed in Appendix 1 to PN633.
- 27.37 It appears to be generally understood within the LFB that section 7(2)(d) is satisfied by sending fire crews to inspect buildings in their area, the frequency of such inspections depending upon an assessment of the risks identified in relation to those buildings. Such visits are of importance, because they enable the building to be examined by someone with a trained eye, but they are not the only potential source of information and some information of importance cannot be obtained by means of a visit of that kind. In the present case one cannot criticise WM Dowden or his crew for failing to discover on a visit to Grenfell Tower that combustible materials were being used in the cladding, much less that the particular configuration of the cladding system made it particularly susceptible to fire. However, information about the materials being used in the cladding system could and should have been obtained direct from the TMO. If it had been obtained, it should have alerted senior officers to the possibility of a cladding fire of the kind illustrated in the *Tall Building Facades* presentation.

²⁶ [LFB00000225] p. 27.

²⁷ Roe Day 49/91/23-25.

Chapter 28

The Incident Ground

This Chapter analyses the events on the incident ground, the responses of the LFB to the developing fire and the systems of communication between the control room and the incident ground and within the incident ground itself.

1 Introduction

- 28.1 There can be no doubt that the rank and file firefighters who attended the fire displayed enormous courage and selfless devotion to duty. In many cases they pushed themselves to, and even beyond, the limits of endurance in their attempt to fight the fire and to rescue those who remained in the building. At the end of his evidence, AC Andrew Roe paid the following tribute to his junior officers and crews:

“I think there is always room in big organisations for improvement to systems, to improve training. I think there’s always room for improvement to the underlying conditions in which our people operate. But, actually, in terms of the response of the night, I could not have been prouder to be a London firefighter, nor lead the men and women of the London Fire Brigade, because I felt that they operated in the best traditions of our 150-year history and put themselves at enormous risk for hour after hour after hour, and that we were battling against what was frankly an absolute failure of the building system, and they had done their absolute best in intolerable circumstances. I have nothing but praise for my junior officers and my crews who performed well beyond what was acceptable in terms of their physical and mental capacity, and, actually, in some numbers have paid the price consequently. It was a privilege to lead them and I’m very proud of what they did.”¹

- 28.2 AC Roe’s words and sentiments are, on the whole, well justified and the firefighters who attended the tower deserve the gratitude of the local community and London as a whole.

- 28.3 I also bear in mind the following words of Dr Lane:

“I do not consider it reasonable that in the event of the installation of a combustible rainscreen system on a high rise residential building, the fire brigade should be expected to fully mitigate any resulting fire event. That is particularly so in circumstances where the fire brigade had never been informed that a combustible rainscreen system had been installed in the first place.”²

- 28.4 It is also worth repeating that, when analysing the events on the incident ground, it is necessary to guard against making judgements with the benefit of hindsight about decisions made under the pressure of the moment. There is a difference, elusive though it may be, between legitimate criticism of the LFB’s performance on the night and the formulation of best practice for the future in the light of what is now known from the evidence. I have, therefore, taken care to evaluate command decisions by reference to the information that was, or should have been, available to the incident commanders at the time. The importance of context is illustrated by the fact that WM Michael Dowden was called out to an ordinary domestic fire in the kitchen of a lower floor flat of a high-rise residential block, a fire which appeared to have been successfully extinguished. He had no reason to think that it might develop into a catastrophic fire which would engulf the whole building. The development

¹ Roe Day 49/199/2-22.

² Dr Lane supplementary report [BLAS0000002] paragraph 2.10.1.

of that fire and the ferocity and speed of its spread were wholly outside his experience and training. These matters form part of the context in which the LFB's actions on the night and, in particular, the decisions of the incident commanders, should be viewed.

- 28.5 However, hindsight provides no answer to the significant systemic and operational failings revealed by the evidence. The bravery and commitment to duty shown by individual firefighters cannot mask or excuse the deficiencies in the command and conduct of operations. Once it was clear that the fire had spread out of control, that compartmentation had extensively failed, but that evacuation remained possible, a decision should have been made to evacuate the tower. In arriving at that conclusion I am conscious that I have received no expert evidence to guide me on it and that a qualitative judgement on the approach of the LFB at the Grenfell Tower fire might be thought to be a matter better reserved for Phase 2. However, I am confident that, on the clear and extensive evidence about the events of the night that I have heard at Phase 1, I can and should reach that conclusion at this stage. It is not in the public interest to wait until the conclusion of Phase 2 to express a view about it.
- 28.6 The reality was that, before AC Roe assumed command, none of the incident commanders had been able to conceive the possibility of mass compartmentation failure and the consequent need to consider, and then order, a total evacuation of the building. There came a point when it was, or should have been, reasonably obvious that operational responses to individual FSG calls were, or were likely to be, ineffective and that the stairs would remain passable for only a limited period of time. In those circumstances, it was, or should have been, obvious that only a supervised mass evacuation would minimise the number of casualties. That point had been reached by 01.30 at the earliest and by 01.50 at the latest. The result is that by 02.47 when the "stay put" advice was withdrawn the best part of an hour had been lost without any evacuation plan having been considered. By 02.44 when AC Roe arrived and assumed command it was too late to carry out a managed total evacuation.
- 28.7 Mass evacuation of the occupants of the tower would no doubt have presented serious risks to the lives of both residents and firefighters, given the internal layout of the building and the absence of any kind of communication system. Nonetheless, it is likely that, in the face of a rapidly developing fire on the exterior of the building and an increasingly pervasive spread of smoke and fire throughout the interior, prompt evacuation would have resulted in the saving of many more lives.
- 28.8 Although I take account of the significant difficulties confronting an incident commander faced with a rapidly deteriorating situation, there were many failures of response on the incident ground on the night. Before the arrival of AC Roe the principal failure was one of command. WM Dowden had sent the "persons reported" message at 01.28, but until AC Roe's arrival none of them had formulated a clear and effective plan directed to saving as many lives as possible in the light of the deteriorating circumstances and none of them had formulated an effective plan for deploying to best advantage the resources that had been summoned to achieve that aim. In short, before AC Roe assumed command, none of the incident commanders had, for a variety of reasons, effectively seized control of the situation.
- 28.9 The consequences of that failure of command were significant. They included a failure effectively, efficiently and swiftly to deploy the first EDBA crews to reach the incident ground in response to FSG calls, a failure to implement effective and efficient arrangements for the communication of FSG messages between the control room and the incident ground, a failure to ensure that information about the internal spread of the fire was communicated from the bridgehead to the incident commander, and a failure to obtain and assess up-to-date

and accurate information about the effectiveness of search and rescue operations, all of which were compounded by failures of communication between the incident commanders themselves.

- 28.10 It would be impracticable to identify and analyse the causes of each and every failure of action and error of judgement in responding to a mass emergency involving hundreds of officers over a seven-hour period. Instead, one must stand back and examine the LFB's operational response from a broader perspective.

2 Command and control

The response to the fire in Flat 16

- 28.11 There was no suggestion that the response to the fire in the kitchen of Flat 16 could have been materially quicker, having regard to the preparations necessary to allow firefighters to reach the building and enter the room safely with an adequate supply of water. WM Dowden formulated and implemented his plan to fight the fire on the understanding that it was nothing more than a routine fire in a domestic appliance. An appropriate number of firefighters were deployed to fight such a fire and, although there was some initial difficulty in securing entry to the tower, that did not unduly delay the crews. Although CM Christopher Secrett was unable to secure control over the lifts (for reasons that remain under investigation), the crews were able to use them to go to floor 2 and set up the bridgehead in accordance with the LFB's normal operating procedure. It should be noted at this point that the firefighters' inability to bring the lifts under their control is relevant to the circumstances in which some residents came to lose their lives.
- 28.12 Thereafter, there was no significant delay in the crews' reaching floor 4, setting in a hose and entering Flat 16. Once CM Charles Batterbee and FF Daniel Brown had entered the flat, they carried out a methodical search of the premises carefully and thoroughly. By the time CM Batterbee and FF Brown had entered Flat 16 and had started their search (01.09), the fire had broken out of the kitchen and ignited the cladding. That appears clearly in the video recording showing the east face of the tower.³ By 01.20 (or thereabouts), when the crew entered the kitchen, the external fire had already rapidly developed. In short, CM Batterbee and FF Brown acted as swiftly as they reasonably could but, by the time they had entered Flat 16, it was already too late to stop the fire from escaping from the kitchen into the cladding.
- 28.13 Likewise, once they had put out the remaining flames in the large fridge-freezer and could see the external fire, FFs John O'Hanlon and Nicholas Barton (the first crew's back-up) tried to direct water towards what they thought was the window surround. As with CM Batterbee and FF Brown, FFs O'Hanlon and Barton did all that they reasonably could, but by 01.30 or thereabouts it was too late to prevent the rapid development of the fire on the exterior of the building.

The initial response to the external fire: 00.54 to 01.50

- 28.14 By 01.30 the following principal events had occurred:
- The fire had broken out of the flat of origin on floor 4 and into the cladding by 01.09.
 - It had reached floor 5 by 01.13 and had spread with increasing speed and ferocity to the very top of the building by 01.26, i.e. in under 20 minutes.

³ [LBYS0000002].

- c. All the “Flat 6s” were exposed to the flame front. Some 20 flats on the east elevation had become involved in the fire.
- d. The exterior fire was beginning to spread laterally around the crown towards the north facade, and southward along the east facade.
- e. WM Dowden had made pumps up from (an already increased) six pumps (at 01.12) to 20 pumps (at 01.29) within some 16 minutes. He had ordered two FRUs and one ALP. There were six pumps and 30 firefighters (excluding those above the rank of Watch Manager) in attendance on the incident ground. A total of nine firefighters had been deployed into the tower from the bridgehead, including those crews deployed to fight the fire in Flat 16 and FF Justin O’Beirne who was not wearing BA. At 01.31.30 WM Dowden made pumps 25, only some two minutes after making pumps 20.
- f. The lobbies as high as the top floor (floor 23) were either smoke-logged or beginning to be affected by smoke and firefighters were experiencing smoke as high as floor 16.
- g. The LFB control room had received 29 calls about the fire, of which 12⁴ had been received from occupants in various locations up to the top of the tower at a considerable distance above Flat 16. At least two were FSG calls properly so called (where the caller had said they were trapped). A number of the calls had reported the whole building on fire. The CROs were already overwhelmed with calls.
- h. The stairs were beginning to be affected by smoke to different degrees at different levels but remained passable to evacuating residents.
- i. The development of the external fire up the east face of the tower, coupled with the number of residents evacuating the tower who had been the subject of smoke inhalation, caused WM Dowden to send the “persons reported” message at 01.28.40.
- j. A total of 112 people had left the tower in the 35 minutes that followed Behailu Kebede’s first 999 call at 00.54.29, representing some 38% of the total of 297 people present in the building on the night of the fire. Of those, 84 had escaped between 01.15 and 01.29.59.⁵
- k. The MPS had declared the fire to be a Major Incident (although the MPS had not told the LFB this at the time).⁶

28.15 The information objectively available by 01.30, certainly when taken cumulatively,⁷ ought to have caused WM Dowden to consider whether an alternative strategy to firefighting should be adopted, and specifically, whether the building should be partially or wholly evacuated and, if so, how. By 01.30 it was or should have been obvious to WM Dowden that the external fire had reached the crown, that there was at least a significant risk that the fire would penetrate the interior of the building, given the strength and speed of its development, that firefighting measures were failing to contain or extinguish the external fire, and that residents (some

⁴ Including the call from Shah Ahmed in Flat 156 on floor 18, which was connected by BT but on which nobody spoke directly, although people could be heard saying “fire” in the background [INQ00000263].

⁵ The exit statistics are based on Annex A which is derived from the MPS’s Schedule of CCTV exits [MET00016072] and other sources where appropriate.

⁶ Inspector Thatcher’s declaration was at 01.26 but it was not shown on CAD 482 until 01.32.

⁷ WM Dowden cannot be criticised for not knowing that the MPS had declared a major incident: the MPS had not told the LFB of the fact.

of whom were suffering from the effects of smoke inhalation) were leaving in substantial numbers. He had also seen occupants coming out of the building suffering from the effects of smoke inhalation, which for him was, as he said, “a big change”.⁸

- 28.16 The magnitude and speed of the external fire did, to an extent, inform WM Dowden’s response. Throughout his time in command he positioned himself outside the tower at or near its south-east corner. He could see the fire’s swift development and behaviour on the outside of the tower. What he saw was reflected in his pump make-ups and orders for other resources such as the ALP, two FRUs and the command units. Regardless of what he actually knew, however, the fact that he considered it necessary to increase the number of pumps in attendance from 15 to 25 in three steps within a period of little more than two minutes should alone have been sufficient to prompt him to reconsider what his overall strategy should be. Similarly, although he considered that sending a “persons reported” message at 01.28 and making pumps 15 was, in his words, “a pivotal change”,⁹ and although he could by then see that the fire was “getting into flats”,¹⁰ he did not consider a change in strategy.
- 28.17 Nor did WM Dowden discuss evacuation with any other officer who was there, such as WM Paul Watson (who had more experience than him) or SM Brett Loft (who was senior to him), despite his appreciation that his firefighting efforts were having no effect at all on the spread of fire up the exterior of the east facade.
- 28.18 I take account of the danger of judging with hindsight the very rapidly changing conditions, the scale of the incident, WM Dowden’s relatively junior rank despite his 14 years’ experience, and the fact that by that time only six appliances had arrived at the tower. Although I doubt that there was a sufficient number of firefighters at the scene by 01.30 to have allowed a safe and efficient assisted evacuation of all of the tower’s occupants, WM Dowden should already have begun to review the quickly deteriorating scene and should have been giving thought to a possible evacuation of the building, either in whole or part. That should have involved consideration of how to deploy and co-ordinate the incoming resources in order to ensure a safe and efficient evacuation. I will return below to the question of how a full building evacuation might have been achieved.
- 28.19 By the time WM Dowden handed over command at 01.50 matters had deteriorated significantly. The position was as follows:
- a. The fire was spreading southwards across the east face, both at the crown and at the lower floors, towards column C5 and had spread to the north face at the upper and lower floors, reaching column A4.
 - b. The LFB control room had received a total of 87 emergency calls relating to the incident. Of those, 37 had come from the tower relating to 23 particular flats in all (repeat calls had been received from Flats 82, 95, 111, 115, 175 and floor 16).¹¹ Of those 37 calls, some 20 were calls in which the caller reported being trapped and affected by fire, heat or smoke or the CRO stayed on the line, and were therefore unambiguously FSG calls. The 20 flats from which those calls had come ranged from Flat 9 (floor 3) at the lowest to Flat 205 (floor 23) at the highest. Nine of those were from flats on or above floor 20¹² and four were from floor 23.

⁸ Dowden Day 11/13/25-14/9.

⁹ Dowden Day 11/11/11-12/2 and note of the PRC meeting of 3 July [LFB00003117] p. 7.

¹⁰ Note of the PRC meeting of 3 July [LFB00003117] p. 7.

¹¹ This total includes the call from Debbie Lamprell from Flat 201 on floor 23 taken by Aisha Jabin in the North West FRS control room at 01.41.18 [LFB00055500]. Jessica Urbano Ramirez’s call from Flat 201 with CRO Russell had already started (at 01.29.48) and was continuing [LFB00055504].

¹² Flats 175, 182, 192, 193, 194, 201, 204, 203 and 205.

- c. CU8 had received six messages from the control room relating to FSG calls from 10 identified flats across a total of 10 different floors.
- d. Firefighters within the building had found many lobbies smoke-logged as high as floor 20, with increasing amounts of smoke in the stairs, particularly at lower levels.
- e. The resources available on the incident ground were:
 - i. A total of 22 pumps which had arrived at the scene,¹³ together with CU8 and CU7, Paddington's turntable ladder (A213), and two FRUs (A216 and G346); 114 firefighters and 10 EDBA wearers were therefore available.
 - ii. Ninety-one firefighters were available for deployment into the tower, and a further 21 firefighters had already been deployed under air into the tower.
- f. By 01.50 168 of the 297 occupants of the building had escaped.¹⁴ They had come down from as high as floor 20. Some were suffering from the effects of smoke inhalation.

28.20 That deterioration in conditions had led to a situation in which a full evacuation of the building had become the only realistic way of minimising loss of life and serious injury. It is doubtful whether WM Dowden ever had in mind the possibility of a full evacuation, since from his perspective such a course was contrary to all the established wisdom about fighting fires in high-rise residential buildings and there is no doubt that nothing in his training or experience had equipped him to deal with an incident of that kind. However, in his role as incident commander he can be criticised for failing to obtain certain important information that was available to him in addition to his own observation of the behaviour of the fire on the outside of the tower. If he had obtained and considered that information, it should have led him to consider evacuating the building, assess the risks involved and then make an informed decision to adopt it as his strategy in place of concentrating on individual rescues. It is difficult to say exactly when WM Dowden should have realised that that point had been reached, but it had certainly been reached by the time he relinquished command.

28.21 The most important information that WM Dowden lacked related to the receipt of emergency calls. Information about the increasing number of calls received by the control room from around 01.30 onwards would have told him three things of importance. First, the fact that by 01.50 the number of FSG calls properly so called dwarfed the number made at the Lakanal House fire¹⁵ would have made him aware that the number of occupants already known to be at risk far exceeded those threatened by any previous fire. That alone might have prompted him to consider a full evacuation of the building, whether it could be carried out safely and if so, how. Secondly, the rate at which the number of FSG calls was rising would have alerted him to the fact that conditions in the building were not being stabilised by effective firefighting but were continuing to deteriorate. Thirdly, the source of the calls would have revealed that many callers were high up in the building, many floors above the floor of origin, and that the flats from which the calls were being made were not limited to those immediately above Flat 16 but included flats in the south-east corner¹⁶ and the north-west corner.¹⁷ There was, therefore, no clear pattern to the locations from which FSG calls were coming to indicate that any particular part of the building was or would remain safe.

¹³ ORR p. 108.

¹⁴ There were 56 exits between 01.30 and 01.50. The exit times of the occupants of Flat 6 on floor 2 are not exactly known but occurred in Period 2. They are included in this total.

¹⁵ There were four FSG calls at Lakanal House.

¹⁶ For example, Flats 82 and 142.

¹⁷ For example, Flats 175 and 205.

- 28.22 WM Dowden did not speak to the senior officer in the control room (OM Alexandra Norman), or indeed anybody else in the control room, in order to find out whether any FSG calls had been received and if so from which parts of the building. Paragraph 5.9 of PN790 required all FSG information to be passed to the incident commander, who would then decide what action to take. No information of that kind was passed to WM Dowden and he did not himself ask for it. Although the control room passed numerous messages to CU8 once it had been set up (and there was a short delay while that was done) at no point did WM Dowden himself speak to WM Daniel Meyrick on CU8 to find out what 999 callers were telling the control room about the conditions in the building and where and why they were trapped.
- 28.23 It was only when CU8 arrived at around 01.30, and when SM Loft arrived shortly after that, that WM Dowden became aware at all that there were “multiple” FSG calls,¹⁸ but at no point did he learn how many were in progress or from which part of the building they had come.¹⁹ One possible reason for his failure to obtain that information was that he had put SM Loft in charge of managing the response to FSG calls as well as liaison with the bridgehead. This decision introduced an additional and unnecessary link in the chain of communication between himself and the bridgehead; it also denied him as incident commander of first-hand knowledge of the number of FSG calls, the locations of callers and the rate at which the number of calls was increasing.
- 28.24 When he instructed SM Loft to take responsibility for the management of FSG calls, WM Dowden did not give him sufficiently detailed instructions about how he was to carry out that role, contrary to the requirements of PN790. For example, he did not tell SM Loft how to obtain information from CU8 or how to forward it to the bridgehead. Nor did he tell him how to record information relating to FSG calls, how to keep the control room informed of actions taken in response or how to keep the incident commander informed of any relevant information derived from them. Similarly, WM Dowden did not establish a clear line of communication between himself and SM Loft and gave him no directions about how or on what basis FSG calls were to be prioritised.
- 28.25 The absence of any detailed instructions regarding the arrangements by which each link in the chain of communication was to be kept informed as the incident developed suggests that, when he briefed SM Loft, WM Dowden was not fully aware of the arrangements that had been put in place for the communication of information relating to FSG calls. The practical consequence was that, as incident commander at a dangerous fire which was already out of control, WM Dowden was not aware of current conditions within the tower or of the number and location of residents who considered themselves to be trapped. I return to the subject of the FSG communications on the incident ground and their effectiveness later in this chapter.
- 28.26 Information about FSG calls was not the only information that WM Dowden lacked. He did not seek or receive reports from the bridgehead about the conditions in the lobbies and the stairs higher up in the building. Information of that kind should have informed his decision-making in the latter stages of his time in command, but he did not ask those at the bridgehead what crews had reported about conditions in the building. To that extent, therefore, WM Dowden failed to ensure that, as incident commander, he had taken steps in accordance with paragraph 7 of PN431 to maintain clear lines of communication throughout the incident between the incident ground and the control room and between the LFB and other emergency services.

¹⁸ Dowden Day 10/149/2-152/12.

¹⁹ Dowden Day 10/152/1-154/12.

- 28.27 Even if WM Dowden could not see or know the precise number of people leaving the building, he should have been aware from his vantage point at the south-east corner of the tower that during the period between 01.30 and 01.50 many of the occupants had left the building. That might have suggested that conditions in the building had deteriorated to the point at which the occupants had decided to ignore the “stay put” advice, although in many cases they were not prepared to remain in the building once they had become aware of a fire. More importantly, however, the fact that so many people had left the building shows that at least up to 01.50 the stairs remained passable. There is no evidence that the stairs were blocked by firefighting activity or that movement was unduly hampered by congestion caused by the number of occupants leaving.
- 28.28 To evacuate a building of this kind in the face of an established “stay put” policy would have required a cool head and a great amount of self-confidence. By 01.50 WM Dowden had been acting as incident commander for the best part of an hour with little or no support from more senior officers. The behaviour of the fire was outside his experience and nothing he had done appeared to be having any effect. He was at a loss to understand what was happening or to know how to respond. However, by 01.50 at the latest he should have realised that the fire had begun to enter the interior of the building and that compartmentation, which underpins the “stay put” advice, had been breached. In those circumstances, he should have spoken to OM Norman in the control room and, having obtained the most recent information, should have decided to evacuate the building and set about ensuring, through the control room, that all callers from the building were told to leave come what may. However, that would not have guaranteed that all occupants still in the building at 01.50 would have been saved.
- 28.29 Two questions then arise: what could WM Dowden have done to evacuate the building and why did he not do it?

3 Evacuation

The building

- 28.30 The capacity of the stairs was sufficient for simultaneous total evacuation of the building. That was the view of Dr Lane,²⁰ and is supported by the fact that 77 people came down them in the 15 minutes between 01.15 and 01.29.59. Furthermore, evacuation may in many cases have been made easier by the fact that many of those escaping would have been family, friends and neighbours familiar with the building and with each other.
- 28.31 Until around 01.35 the stairs were substantially free of smoke and provided a means of escape before visibility was materially impaired.²¹ Although conditions then began to deteriorate, the stairs remained substantially free of smoke until around 01.50.

Available evacuation methods

- 28.32 Although conditions in the stairs did not present an insurmountable hurdle, carrying out an organised evacuation of the building would have been by no means straightforward. Any plan would have required two practical elements: informing the occupants that they must make every effort to leave with the assistance of firefighters and deploying firefighters to inform the occupants that they must leave and to assist them in doing so. The two elements would have had to work together for the plan to be effective, but for neither of them was there any clear policy, training or well established method by which to carry them out. The challenge was

²⁰ Dr Lane supplementary report [BLAS0000019] 19.6.71.

²¹ Dr Lane supplementary report [BLAS0000014] 14.4.188(b) and (c); Professor Purser [DAPR0000001] 153(a).

compounded by the fact that there was no reliable means by which the incident commander or the control room could tell the occupants that they needed to leave. These obstacles do not mean that a complete evacuation of the tower was impossible, but they do suggest that its execution would have been difficult and would have given rise to dangers, including a risk to life.

- 28.33 The need to inform the occupants that they must leave the building required a reliable means of communication. There was, however, no alarm or public address system serving the whole building which could have been used for that purpose. Although it was possible for firefighters on the ground to use loudhailers (and one was used early on in the night by FF Patrick Murray to advise occupants to leave)²² or to ask the MPS to ask the NPAS helicopter crew present at 01.44 to use the “skyshout” on-board broadcaster, it is unlikely that any advice broadcast by these devices would have been clearly heard by all occupants above the noise of vehicle engines, pumps, sirens and the NPAS helicopter’s rotor. It might also have been possible to use the flat entry intercom systems to speak to individual residents, but that depended on whether they could or would get to the entry phone to answer it. All these methods of communication would have been essentially improvisations and would probably have been unreliable to some extent.
- 28.34 As I have already observed elsewhere in this Report, there is nothing in the Building Regulations or in Approved Document B which requires the owners of high-rise residential buildings such as Grenfell Tower to have sounders or public address systems for the whole building or any means of communicating with all the occupants in order to facilitate a total evacuation. Accordingly, WM Dowden was always going to be restricted in what he could do to achieve full evacuation by the limitations inherent in the building itself. Furthermore, although GRA 3.2 makes it plain in several places that the incident commander should have contingency plans for the evacuation of a high-rise building, should circumstances require it, it provides very little practical guidance on how to go about it. GRA 3.2, section 2, paragraph 23 contemplates expressly that a “Stay Put policy may become untenable due to unexpected fire spread”, but the control measure it then provides is to “consider all means of contacting persons within [the] building, such as intercom telephones, loud hailers etc”. In other words, an incident commander is expected to consider revoking “stay put” and moving to evacuation if the circumstances so require but must resort to improvisation to carry it out. That is not to suggest that these methods of communication should not have been tried. On the contrary, if a decision to evacuate had been taken, they should all have been used or tried in the hope of reaching as many occupants as possible as early as possible.
- 28.35 If WM Dowden had decided to evacuate the tower there were in reality two possible ways of contacting the occupants, in addition to resorting to improvisation of the kind I have mentioned. One was to ask the control room to tell anyone calling from the building that the fire brigade had decided to evacuate the building and that they should leave. Although the message would have reached only those who had made an emergency call, it would have been received by those who were sufficiently concerned for their safety to make such a call. The other was by the deployment of firefighters into the building to inform occupants that they needed to leave and to assist with evacuation where necessary.

²² Murray witness statement [MET00010925]; Rania Ibrahim’s Facebook post at around 01.40 which picked up this broadcast: Ismail Exhibit SI/2 [IWS00001232] at 05.05.

- 28.36 The first way of contacting occupants was only ever likely to be a partial solution. Some 999 callers did not call for the first time until some time after 01.50.²³ The later that such callers called, the worse the conditions they would have encountered in the lobbies and, possibly, the stairs and therefore the greater the disincentive for any occupant to take the advice to leave. The element of chance could, therefore, not be wholly eliminated by using the control room to communicate with callers.
- 28.37 There was a partial solution to the problem of depending on people making calls, at least where they had rung previously. If the decision to evacuate at 01.50 had been made by WM Dowden, OM Norman, who was at that stage in command in the control room, could and should, where possible, have departed from the custom (prevalent in the LFB if not generally in other fire and rescue service control rooms in the UK) not to call 999 callers back. Once it became obvious that all available measures had to be taken to inform occupants of the need to evacuate, there was no good reason to cling to this anachronistic custom. The VISION system in the control room had captured the numbers of callers who had already made calls on their system, but it would have been difficult to identify earlier callers from within the tower. Accordingly I cannot accept the Commissioner's evidence that the only means of communicating with occupants who did not ring the control room again was by a "door-knock".²⁴ I do accept her evidence²⁵ that finding previous callers' phone numbers in the VISION system by scrolling through the log would have been difficult, but not impossible. But as I say, this partial solution was only workable at all for those who had already called.
- 28.38 The second possible route to achieving communication with occupants to effect a full evacuation would have been through the physical deployment of firefighters into the building both to inform occupants that they needed to leave and to assist with evacuation where necessary. SM Daniel Egan, in his oral evidence, explained his thought processes about how a full building evacuation could have been carried out. He said:
- "...they would systematically go through a couple of floors at a time, with crews going along, banging on doors, giving people a chance, you know, trying to cajole them out if they was in there, and then trying to escort them down. And then perhaps do three floors at a time, depending on how it was working..."²⁶
- 28.39 Making every allowance for the lack of numbers of firefighters available to him during his time in incident command, WM Dowden could have sent as many firefighters as he had as high as possible into the tower to knock on people's doors on each floor and alert the occupants to the need to leave, and assisting them where necessary.
- 28.40 The method of contacting occupants described by SM Egan, although hypothetical, was at least possible and should have been attempted by WM Dowden at the latest by 01.50 while the stairs were relatively clear. In addition, WM Norman Harrison had had previous experience of a full evacuation of a six-storey building at night by using a similar procedure.²⁷
- 28.41 By 01.50, 22 pumps had arrived at the incident ground, so WM Dowden had about 114 firefighters at his disposal, including 10 EDBA wearers. At that stage he should have sent as many crews as were reasonably available into the tower to knock on doors, alert the occupants

²³ For example, Marcio Gomes (Flat 183, floor 21) whose first call was at 02.21.04; Khadija Saye (Flat 173, floor 20) whose first and only call was at 02.26.48.

²⁴ Cotton Day 50/183/1-23.

²⁵ Cotton Day 50/183/1-23.

²⁶ Egan Day 16/49/7-20.

²⁷ Harrison Day 45/101/6-20.

to the need to leave, and assist them to do so where necessary. Indeed, that approach was one which DAC Andrew O’Loughlin himself suggested in his evidence (although he did not adopt it on the night).²⁸

- 28.42 Although this strategy might have exposed firefighters (very few of whom had EDBA by 01.50) to serious danger higher up in the building, it was still at least a possible use of the gradually increasing number of incoming crews. On any view it was far more preferable to WM Dowden’s continued pursuit of firefighting while positively encouraging occupants to remain in the building by maintaining the “stay put” advice.
- 28.43 An important question which remains is how WM Dowden could have ensured the safety of those occupants of the tower whose impaired mobility or other health difficulties meant that they needed help to get out. Although GRA 3.2 provides a nod in that direction on page 18, it provides no practical assistance to an incident commander about how to rescue such people if they need to be evacuated. They will always need firefighter assistance, but any incident commander in WM Dowden’s position will first need to know which flats they are in and what kind of difficulties they have before he can deploy crews to assist them. That information, specific to each occupant and up-to-date, should have been provided long in advance to the LFB by the TMO or RBKC and been available to WM Dowden in the ORD. It was not. Even if it had been, it is unclear even with the benefit of hindsight how WM Dowden could have achieved assisted evacuation of such occupants on the higher floors given the low numbers of EDBA wearers he had at his disposal by 01.50. I return later in this chapter to the attempts to prioritise rescues.
- 28.44 In summary, a mass evacuation was not something for which WM Dowden or any of the other officers present that night (including AC Roe) had been trained. It would have posed formidable practical difficulties, but it was possible and to attempt it was preferable to telling occupants to stay in their flats.

Why was evacuation of the tower not pursued?

Lack of training

- 28.45 The primary obstacle in the way of WM Dowden’s carrying out a full evacuation of the building was that he had not been trained for it. The mere existence of the decision-making model in PN341 was not of itself enough. In simple terms, the decision-making model failed not only because WM Dowden did not “recognise and react quickly to changing circumstances”, but because he did not know what to do. Similarly, there is nothing in PN633 or the various incident command policies that assists incident commanders in that respect. Having seen and heard WM Dowden over three days, I do not think that his failure was due to any personal lack of ability or commitment. Rather, it was due to deficiencies in his training which failed to equip him with the means of deciding when to switch from the “stay put” strategy to one of partial or total evacuation. His extensive oral evidence about his training and its limits, particularly in relation to evacuation and contingency planning in relation to fires in high-rise buildings,²⁹ strongly supports that conclusion, as does the evidence of other senior firefighters. Many senior firefighters said that they had not been trained in recognising the circumstances in which an incident commander should consider instructing the control room to abandon the “stay put” advice, as contemplated by paragraph 8.7 of PN790.³⁰

²⁸ O’Loughlin Day 47/76/11-77/21, 161/1-163/9.

²⁹ Dowden Day 9/21/22-40/19.

³⁰ For example, O’Loughlin Day 47/25/11-27/1.

- 28.46 Although he recognised that the scale of the incident required greater resources, his training did not equip WM Dowden with the means of understanding the nature of the fire or how best to combat and contain it. Nor did it equip him to decide whether to undertake an evacuation of the tower or how best to do so. His failure to appreciate the significance of the information available to him must be attributed to inadequate training rather than incompetence on his part. He himself was candid in his PRC debrief, saying that at the point when he made pumps 15 (at 01.27.26) he “felt helpless”.³¹
- 28.47 That conclusion is strongly supported by the fact that WM Dowden had plenty of more experienced officers around him during his time in command, such as WM Brien O’Keeffe, WM Watson, and latterly SM Loft and SM Gareth Cook, all of whom could see what he could see and none of whom took him to task over his methods or advised him to evacuate the tower. If WM Dowden had fallen below the standards expected of him, it would have been obvious to his fellow officers, who I am sure would have said something to him. I can only infer, therefore, that his actions were regarded as competent by the LFB’s own standards. Indeed, the positive appraisal given by the LFB to his command in the LFB’s incident report focused on firefighting and command structures and said nothing about considering alternative strategies or use of the decision-making model.³²

Lack of support from more senior officers

- 28.48 It is a strikingly unsatisfactory feature of the incident that WM Dowden was left in command of this incident for so long after it had become quite apparent that it was a fire of unprecedented scale and not remotely under control and so long after he “felt helpless” at make pumps 15 (01.27.26). That was due in part to the sheer speed at which additional pumps were requested (which itself has a bearing on the attendance of more senior officers) and the time it took to summon more senior officers to the incident ground. However, when more senior officers did arrive shortly after 01.30, WM Dowden did not receive the assistance and support that he was entitled to expect from them.
- 28.49 LFB policy required the attendance of a monitoring officer. SM Andrew Walton assumed that role at 01.02.43 when he was paged by the control room, but could do little until he got to the incident ground at 01.40.12, and even then did not assume command in accordance with PN412. I appreciate that on arrival he may have wished to acquaint himself with the incident and the extent of the fire, but he could and should have taken steps to assume command more swiftly following his arrival. At 10 pumps a DAC was supposed to assume command monitored by an officer of AC rank, and at 16 pumps an AC was supposed to take incident command.³³ The fact that a Watch Manager was left in command, without any effective remote monitoring assistance, for the first hour of the incident and for a full 20 minutes or so after the make-up had reached 25 pumps displays a shortcoming in the LFB’s mobilisation arrangements.
- 28.50 At 01.32 SM Loft arrived at the scene. Although PN431 suggests that the incident commander need not always be the most senior officer present, the fact that WM Dowden felt so out of his depth by 01.31 should have led SM Loft, as the more senior officer, to take command, but he did not do so.³⁴ Given the scale of events, WM Dowden could and should have discussed with SM Loft the strategic and tactical response to the fire, but did not do so. Equally, SM Loft could and should have forced a discussion with WM Dowden on these matters or, at least,

³¹ [LFB00003117] p. 7.

³² LFB’s incident report [LFB00003114] pp. 4, 5.

³³ PN412.

³⁴ PN431, paragraph 1.2.

raised the question of evacuation, but he did not do so. Instead, SM Loft agreed to leave WM Dowden in command and was instructed by him to assume responsibility for managing FSG information. He accepted that role without any wider discussion of its purpose and without ensuring that he put in place a system whereby the incident commander would receive accurate and up-to-date information about the success or otherwise of deployments in response to FSG calls.

- 28.51 SM Cook arrived at 01.38. He attended as Press Officer and so was not entitled to assume command. However, his role was nonetheless to provide command support to WM Dowden in his decision-making, but he provided no such support, although he clearly understood that that was his role.³⁵ He was not able to provide any satisfactory explanation for that.
- 28.52 Having not assumed command themselves as policy required, neither SM Loft nor SM Cook gave WM Dowden any practical or effective advice about how to attempt to take control of the incident, whether to evacuate the building and, if so, how best to deploy the incoming resources to assist such an operation. No good reason was put forward to explain why WM Dowden was not relieved of command by SM Loft or SM Cook, although it is fair to say that there is no evidence that either officer had a better informed or a more positive plan to combat the fire or to save life.

“Stay put”: an article of faith

- 28.53 There is in my view a further underlying reason why WM Dowden, and indeed the incident commanders after him, did not change strategies, quite apart from the fact that he (and they) failed to appreciate the significance of much of the information which demanded it. The absence of any policy guidance on how to carry out a full building evacuation with no evacuation plan in place and no means of telling the occupants to leave can only have discouraged him from contemplating the possibility of a full evacuation. The knowledge that high-rise buildings are constructed on the basis of effective compartmentation itself created a barrier to thinking about evacuation.
- 28.54 Similarly, one could occasionally detect in the evidence of senior officers a reluctance to believe that a building could ever fail to comply with the Building Regulations.³⁶ The evidence taken as a whole strongly suggests that the “stay put” concept had become an article of faith within the LFB so powerful that to depart from it was to all intents and purposes unthinkable. That itself helps to explain why it was not thought about until it was too late for many of the occupants of the tower. The fact that the Commissioner was compelled to ask the rhetorical question: “It’s all very well saying ‘Get everybody out’, but then how do you get them all out?”³⁷ emphasises that the LFB had never itself sought to answer that question in its preparations and training and had not equipped itself to carry out a total evacuation of such a building. The requirements of GRA 3.2 and some of the provisions of its own PN633 demand an answer to that question, which will be investigated in Phase 2.
- 28.55 Quite apart from its remarkable insensitivity to the families of the deceased and to those who had escaped from their burning homes with their lives, the Commissioner’s evidence³⁸ that she would not change anything about the response of the LFB on the night, even with the benefit of hindsight, only serves to demonstrate that the LFB is an institution at risk of not learning the lessons of the Grenfell Tower fire.

³⁵ [MET00007882] p. 4.

³⁶ For example, O’Loughlin Day 47/20/11/-21/5.

³⁷ Cotton witness statement [MET00012492] p. 38.

³⁸ Cotton Day 50/236/8-17.

4 Handing over command

- 28.56 Efficient handover of command from one incident commander to the next is essential if firefighting and rescue operations are to be conducted effectively and with the minimum of disruption. That requires the incoming commander to obtain from the outgoing commander a clear understanding of the nature and development of the fire, the resources available, the measures that have been, and are currently being, taken to fight it, the number of people trapped in the building and the steps being taken to rescue them. These are all matters covered by PN431.

The handover of command to SM Walton

- 28.57 The principal characteristic of the handover of command from WM Dowden to SM Walton was its brevity. There was no discussion about the progress of the fire, which was still developing, the number and source of FSG calls, the practicalities of evacuation or withdrawal of the “stay put” advice. In the absence of any information about conditions within the tower, it was reasonable and necessary for SM Walton to despatch WM Dowden to collect that information, as he did. Although there is evidence that external firefighting had, to a limited extent, been successful in containing the fire on the east face below floor 17, there was no reason to think that the external fire was under control at all. On the contrary, it was continuing to develop at pace. In these circumstances, the risk of fire breaking back into flats and the consequential risk to life was plain. Indeed, SM Walton’s main consideration was whether the fire was breaking back into flats; if it had been, he would have declared a Major Incident, because he would have considered that the whole building needed to be evacuated. However, he was not in command long enough to establish the facts or to formulate a plan for evacuation.
- 28.58 Given what SM Walton could see and given his concern about the risks of fire entering flats, the possible need for evacuation and its practicalities should have been explicitly raised during his assumption of command from WM Dowden. When DAC O’Loughlin relieved SM Walton very shortly afterwards, evacuation should have been the first matter discussed and, with the benefit of information about internal conditions, a decision should have been made. It is possible that it was not raised because SM Walton did not think that the fire was getting into flats. Laurence Ioannou, the LAS Incident Response Officer, arrived on scene at 01.49 and had a brief conversation with a firefighter, probably SM Walton, who said: “It’s not as bad as it looks. We believe it is an external fire and has not penetrated internally”.³⁹ It is possible, however, that SM Walton told Laurence Ioannou that the fire might be breaking back into flats and that the LAS should be prepared to deal with multiple casualties,⁴⁰ but if that was the subject of discussion, SM Walton did not act on it during his brief period of command, nor did he brief DAC O’Loughlin about it when he took over.
- 28.59 SM Walton’s evidence about whether to mount a full evacuation was telling. He considered that a full building evacuation was to all intents and purposes impossible.⁴¹ He told the Inquiry not only that he had received no training in how one might be carried out,⁴² but also that in a high-rise building only the compartment of origin and the surrounding flats were ever evacuated, not the whole building. SM Walton thought that, as he put it, there was “no option to evacuate a building where the building principle has failed to the extent that the means of

³⁹ Ioannou witness statement [MET00010862] pp. 3, 5.

⁴⁰ Walton witness statement [MET00010828] p. 27.

⁴¹ Walton Day 46/14.

⁴² Walton Day 46/37, 64.

escape don't exist".⁴³ However, at the time he took over from WM Dowden, they did exist, and although by that stage the conditions in the lobbies and stairs had deteriorated markedly, they never became completely impassable, as the escapes later in the night attest.

The handover of command to DAC O'Loughlin

- 28.60 DAC O'Loughlin assumed incident command at around 01.56. The two defining characteristics of the handover from SM Walton to DAC O'Loughlin were, again, its brevity and, more importantly, the failure of DAC O'Loughlin to obtain the information required to exercise effective command over an obviously deteriorating situation.
- 28.61 By 02.00, a few minutes after DAC O'Loughlin had assumed incident command, the following principal events had occurred:
- a. Flames had reached the crown on the south side of column C5 and its base was burning. Flats 151, 161, 171, 181, 191 and 201 had become involved in the fire, having been affected by the flame front as it spread southwards across the east face of the tower.
 - b. The flame front had begun travelling across the north face in a westerly direction.
 - c. The control room had received a further eight emergency calls since 01.50, two from members of the public and six from trapped residents. There were no new flats from which calls were emanating, but the conditions at different places in the building were rapidly deteriorating, as is shown by the developing information about repeated calls from Flats 196 (floor 22), 182 (floor 21) and 95 (floor 12). Forty-five adults and 16 children had been reported to be within the building.
 - d. On the incident ground:
 - i. CU8 had been given FSG information in the form of a total of six further radio messages or admin line calls in relation to people on floor 10 and Flats 133, 182 (twice), 111, 115, 95, 205 and 201.
 - ii. Twenty-five pumps and a second command unit (CU7) were in attendance. Since 01.30 some 30 firefighters had tallied out wearing BA and been deployed into the tower, including the EDDBA crew of five from Paddington A216 who had been sent to the roof.
 - iii. Evacuations from the tower had ceased from 01.49 (and did not resume until 02.07).⁴⁴
- 28.62 DAC O'Loughlin's position was very different from that of WM Dowden when he had arrived at 00.59. From the outset, DAC O'Loughlin was faced with an uncontrolled, still-developing external fire. The state of the external fire should have spoken for itself, but during the course of the handover from SM Walton and WM Dowden there was no discussion of evacuation, the number and source of FSG calls or what arrangements had been put in place to prioritise FSG calls. If DAC O'Loughlin had stood back and considered what was in front of him, if he had asked WM Dowden about the rate of development of the fire, if he had asked the control room about the number of FSG calls that had been received, if he had considered the need for EDDBA resources, if he had noted the fact that many residents had already left the building and their condition at the time, he would have had enough information to know that the risk

⁴³ Walton Day 46/146.

⁴⁴ There is an 18-minute gap between the exit of Branislav Lukic at 01.49.09 and David Lewis, a visitor, at 02.07.15.

of continuing to give “stay put” advice was greater than that of evacuating the tower. Even if SM Walton and WM Dowden had not raised the question of evacuation, an officer of DAC O’Loughlin’s seniority and experience should have done so.

- 28.63 I fully recognise that, even if an order to evacuate (whether total or partial) had been given by 02.00, some lives might still have been lost. I also recognise that the mechanics of carrying out an evacuation of any sort in rapidly deteriorating conditions would have presented its own risks to the lives of residents and firefighters. However, I have little doubt that fewer people would have died if the order to evacuate had been given by 02.00. The time between 02.00 and 02.47, when AC Roe ordered the “stay put” advice to be withdrawn, was effectively lost.

The assumption of command by GM Richard Welch

- 28.64 Before returning to examine DAC O’Loughlin’s actions in command, it is necessary to refer to the parallel assumption of command by GM Welch at around 02.00, the defining feature of which was that he purported to relieve SM Loft, who was not, and never had been, incident commander. Remarkably, GM Welch did not first seek to confirm with SM Loft that he was in command (which in fact he was not). This unfortunate episode, in which there were two incident commanders each operating in ignorance of the other, illustrates not only the extent of the confusion about who was in command of the incident at 02.00 or thereabouts, but also the potentially serious consequences that might have ensued if they had given contradictory orders. Thankfully, that did not happen, but the potential for confusion would have been avoided if GM Welch had asked SM Loft whether he was, in fact, the incident commander and followed the basic requirements of PN431 governing the handover of command.
- 28.65 Like SM Walton, GM Welch’s view of the possibility of a full evacuation was negative. He said that he had no reason to think that the compartmentation of the building was failing and that fire might be spreading internally because “it’s not something that we see”.⁴⁵ He had not thought, on his arrival, that the fire was penetrating flats and throughout the brief period he was acting as incident commander he thought that the fire was remaining on the exterior, although he had not been into the building to investigate.⁴⁶ He considered that the calls from the tower were from occupants in a panic about smoke coming in through their open windows.⁴⁷

The handover of command to AC Roe

- 28.66 When he assumed command at 02.43 AC Roe was briefed by DAC O’Loughlin about the state of the fire, the command and organisational structure that had been implemented as well as about the arrangements for the supply of BA equipment. Although AC Roe had assumed command with a clear idea of the strategy to be adopted (to which I turn later in this chapter), it is regrettable that DAC O’Loughlin did not tell him that no information had come back to CU8 from either the fire sector or CU7 for the previous 25 minutes. That piece of information might have identified, at the start of AC Roe’s time in command, the communication difficulties that were hampering an informed response to the incident.

⁴⁵ Welch Day 44/72.

⁴⁶ Welch Day 44/55/4-56/1 and notes from 3 July 2017 PRC meeting [LFB00003117] p. 17.

⁴⁷ Welch Day 44/55/20-56/1.

5 DAC O’Loughlin as incident commander

- 28.67 DAC O’ Loughlin assumed incident command at around 01.56 and remained in that role until 02.44, when AC Roe took over. It was during his time in command that the principal failures of the LFB up to that point became a continuing and ineffective strategy. In summary, the failures were distinct but closely related: not revoking the “stay put” advice (and instructing the control room accordingly), not adopting an evacuation strategy as far as resources and the internal conditions would allow, and continuing to carry out targeted rescues in circumstances where the FSG information was changing and unreliable and there was no effective communication between the control room, the bridgehead and himself. DAC O’Loughlin concentrated on establishing command structures, but he did not gather the available information about conditions inside the building, fire spread, the nature, number and source of FSG calls and the results of BA deployments before formulating a strategy based on it. A sophisticated command structure was of little value unless it supported an informed strategy for fighting the fire and rescuing occupants. Although, ordinarily, command decisions about how to tackle a substantial fire should not normally be made in the absence of an appropriate command and control structure, there will be rare occasions (such as the fire at Grenfell Tower) when the urgency and threat to life is so great that decisions need to be made before such a structure has been established.
- 28.68 DAC O’Loughlin’s period in command was marked by a number of errors. First, on taking command he did not discuss the strategy then in place and examine whether it needed to change. Given the information available at 02.00, that was a serious mistake. Although during his journey to the tower he had heard over his Airwave radio numerous FSG messages being passed to CU8, he did not consider whether the “stay put” advice needed to change. Indeed, he did not discuss that subject at all in the course of the handover with either WM Dowden or SM Walton. He told the Inquiry that his reason was (or “would have been”) that there had been people in their flats who were unaffected by smoke, heat or fire and were in a safe environment. He said that he had had no reason to think that those on the south-west corner of the building would be at risk (i.e. the “Flat 3s”) either from external fire spread or from internal smoke spread across lobbies.⁴⁸ He would, on the other hand, have expected those on the north-east corner (i.e. the “Flat 6s”) to have left their flats.⁴⁹ However, these were unverified and erroneous assumptions. Had he spoken at the start of his command to OM Norman in the control room, or indeed WM Meyrick on CU8, he would have discovered that before 02.00 no fewer than seven FSG calls had come from “Flat 3s”, including two on floors 22 and 23 (Flats 193 and 203), and five FSG calls from the “Flat 4s”, i.e. on the west side of the tower, including two calls from Flat 194 (on floor 22) and two calls from Flat 204 (on floor 23).⁵⁰
- 28.69 It was not until 02.41, just before AC Roe took over command, that DAC O’Loughlin became aware of the number of FSG calls that had been received and the number of occupants trapped in the building, when CU7 sent a runner to CU8 to tell him that there were as many as 58 adults and 16 children trapped. DAC O’Loughlin said that that had come as a complete surprise to him. He had thought the number was in double figures, but the figure he was

⁴⁸ O’Loughlin Day 47/136/22-138/7.

⁴⁹ O’Loughlin Day 47/138/7-12.

⁵⁰ That of course assumes that the control room and CU8 were collating the FSG information in an organised way, which is itself a matter of doubt.

given was “an horrendous number”.⁵¹ However, despite his surprise, he continued to believe that there were flats where occupants remained safe, and called for a “clear briefing” on how the fire had progressed since he had last seen it.⁵²

28.70 Secondly, if he had been able to establish contact with the NPAS helicopter, even by radio, he would have discovered that flats on the west and south-west aspects of the tower were affected by fire. At 02.07.25 there was a message that “flats [sic] from 115 are trapped, unable to get out”, and at 02.09.32 the NPAS helicopter reported that “residents on the top 6 floors of the west and south-west aspect all leaning out of open windows, they will be in danger of the fire inside”. At this point DAC O’Loughlin was still of the view that flats on the south-west corner would provide refuge for those in them.⁵³ That shows not only how important it was for him to have had the heli-tele downlink in operation at that time, but also that the NPAS helicopter was a vital source of visual information available to him that he did not try to use. There is no evidence that he made any effort to establish contact with the helicopter to ask the crew to tell him what they could see which he could not.

28.71 Thirdly, DAC O’Loughlin knew from the moment he arrived that the fire was spreading extensively on the exterior. It was, as he put it in his contemporaneous notes, “wrapping round the building.”⁵⁴ However, he appears to have laboured under the mistaken impression that compartmentation had not wholly or substantially failed. His error resulted from a failure to pay adequate attention to whether the fire was breaking into the interior of the building. DAC O’Loughlin’s evidence about his knowledge of that important development was inconsistent. His recollection as recorded in the notes of the PRC meeting on 3 July 2017 was unambiguous: “Fire was in flats. No clear indication of how many involved”.⁵⁵ However, the gist of his subsequent witness statement was that he had thought that the cladding had caught fire and had burnt away and that the fire had remained on the outside of the building and had not got into many, if any, flats.⁵⁶ When he came to give evidence in person, he settled for a position somewhere between those extremes. He said that he had known that there was a risk that fire and smoke would get into flats through open windows and that although he had not expected that the fire would penetrate flats where the windows were closed, the risk of that happening was “on his radar” and something that he needed to establish.⁵⁷ He had been well aware in general terms that there were a number of FSG calls from the building in progress because he had heard them over his Airwave radio on his way to the incident. He had also been well aware that there were occupants trapped on high floors and were affected at least by smoke.⁵⁸ He said that he had understood from the radio messages about FSG calls that the “products” of fire (presumably hot gases and smoke) had got into some of the flats,⁵⁹ but he also said that he did not think that fire would “necessarily” be getting in.⁶⁰ That was hard to follow. His evidence struck me as an unsuccessful attempt to reconcile what he had heard by way of FSG information with his assertion that he had not realised that the fire had broken into the interior of the building, possibly extensively so. When asked about his conversation with GM Welch on CU8 he said that he had not been able to see the fire breaking into flats, but from the contents of the FSG messages he had assumed that it was.

⁵¹ O’Loughlin Day 47/240/1-241/18.

⁵² O’Loughlin Day 47/244/6-23.

⁵³ O’Loughlin Day 47/137/9-139/9.

⁵⁴ [MET00005213] paragraph 10.

⁵⁵ [LFB00003117] p. 19.

⁵⁶ [MET00012563] p. 8.

⁵⁷ O’Loughlin Day 47/52/17-53/1.

⁵⁸ O’Loughlin Day 47/41/24-42/2, 45/6-47/15.

⁵⁹ O’Loughlin Day 47/48/11-18.

⁶⁰ O’Loughlin Day 47/50/12-18.

- 28.72 To be fair to DAC O’Loughlin, there were others present on the incident ground who also thought that the fire had not penetrated the interior, including GM Welch and probably also SM Walton. However, as he accepted, given what he knew from the FSG calls, it was his responsibility to establish the extent to which that had occurred and to gather as much information as he could about conditions inside the building. The fact is that he did not do so.
- 28.73 Furthermore, the question of whether the fire was or was not limited to the exterior of the building, although vital, was not the only question. Another question of equal importance was the smoke conditions in individual flats and particularly whether the air continued to be safely breathable or there was an appreciable risk that flats were becoming unsafe for their occupants. It is clear that by 02.00 there were many occupants of flats throughout the building who were experiencing significant smoke ingress, either from the lobbies, under and around their front doors or from the windows. DAC O’Loughlin did not address that question, although the information was available from the various 999 calls and from firefighters returning to the bridgehead. It was critical to balancing the risk of advising occupants to leave their flats and entering smoke-filled lobbies and a deteriorating staircase against the risk of advising them to remain in increasingly smoke-filled flats. For much of DAC O’Loughlin’s command that was to say the least a difficult choice, but it was one that needed to be confronted with the fullest information possible.
- 28.74 Fourthly, DAC O’Loughlin’s assumption that there had been no failure of compartmentation affecting the whole building and that there were still flats in which the occupants remained safe resulted in his continuing with a strategy of targeted rescues rather than calling for a full evacuation. That strategy, such as it was, does not appear to have been the result of any specific decision by DAC O’Loughlin; rather it was a continuation of the strategy that had evolved under WM Dowden, SM Walton and GM Welch. It was also inconsistent with his own evidence that in the case of a 40-pump fire⁶¹ the whole building would have to be evacuated.⁶² It was pursued in the absence of proper information, because he had received no reports from the bridgehead about conditions in the building and he had received no information from the control room about the nature, number and source of FSG calls. There were other officers present, such as SM Egan and possibly also WM Harrison, who expressed the view at or shortly after 02.00 that the “stay put” advice should be revoked and a full evacuation ordered, but their views were never discussed with or considered by DAC O’Loughlin.⁶³
- 28.75 That raises the question why DAC O’Loughlin did not revoke the “stay put” advice and order a full evacuation of the tower either upon or soon after taking command. The answer is because at no stage did he obtain a proper understanding of the nature of the conditions inside the building, whether from information available from FSG calls, information obtained by the bridgehead from crews returning from rescue operations, or information available from the control room. The value of the information available from the control room is demonstrated by the decision of SOM Joanne Smith, taken at around 02.35 in conjunction with DAC Adrian Fenton, to advise everyone to leave, come what may. It was made at a place remote from the incident ground with no visual aids to help them understand what was happening and no information from the bridgehead about conditions within the building. Yet the information they were receiving from callers was sufficient to convince them that nowhere in the building could be regarded as a place of safety and that the “stay put” advice should be revoked.

⁶¹ As it was at 02.03 [LFB00002631].

⁶² Day 47/124/20-125/15.

⁶³ Note also the fact that, as referred to above, FF Murray was using a loudhailer at around 01.40 to advise occupants to leave the tower, although it is not clear on whose orders he was acting.

- 28.76 The whole of DAC O’Loughlin’s period in command was devoted to establishing a command structure from a single location inside CU8, which he entered at around 02.03 and did not leave until after AC Roe had taken over command at 02.44. DAC O’Loughlin’s contemporaneous notes describe what he did by way of sectorisation and delegation of duties.⁶⁴ Although it may all have been in accordance with LFB incident command policy, the consequence of his actions was that at no point was he able to make an informed assessment of what was happening in the building. His surprise on learning at around 02.41 of the number of people trapped in the building and his need at that stage for a “clear briefing” on the progress of the fire, demonstrate how out of touch he had been up to that point. His role as incident commander required him to ensure that all the appropriate systems were in place and (so far as he could ascertain) were properly functioning, particularly in relation to the management of FSG calls. He said in evidence that he had considered that there was an effective system for managing FSG information, but it is not clear how he had satisfied himself that that was so.

6 AC Roe as incident commander

Revocation of the “stay put” advice

- 28.77 By the time AC Roe assumed command, the fire on the exterior of the building had spread from the north face and had started to burn down the west face. In relation to the stairs, there was black smoke as high up as floor 23 with very poor visibility and no light from somewhere between floors 2 and 4 to the top of the building. By that time it was no longer practicable to carry out a supervised mass evacuation due primarily to the deterioration in conditions in the stairs. In those circumstances AC Roe’s strategy of carrying out individual rescues in response to FSG calls was the only practicable means of saving those who remained trapped in the tower.
- 28.78 The first thing AC Roe did on assuming command was to revoke the “stay put” advice. His decision was based on his assessment of the extent to which the fire had spread and what he considered to be a total failure of compartmentation.⁶⁵ He considered that the “stay put” advice was “absolutely unsustainable”.⁶⁶ As he put it: “We were no longer going to be able to reasonably advise people they should stay put. That was the first thing in my head”.⁶⁷ However, when asked what advice the control room should then have given he gave a more qualified answer which recognised that some people might do better to remain in their flats.⁶⁸ That qualification was not consistent with his decision to revoke the “stay put” advice to all callers from the building and his view that that advice was “absolutely unsustainable” and “unreasonable”. The strong terms in which he expressed the need to change the advice (and the speed at which he did so on assuming command) strongly suggest that DAC O’Loughlin’s continued maintaining of the “stay put” advice, at least towards the end of his time in incident command, was incapable of being defended.
- 28.79 AC Roe’s decision to revoke the “stay put” advice was made independently of the decision made in the control room. It was made without hesitation, based on what he could see in front of him. He considered it unnecessary to discuss the matter with the control room because he was sure in his own mind that such advice could no longer properly be given.⁶⁹ He acknowledged that by telling callers to leave there was a risk of sending them into a smoke-

⁶⁴ [MET00005213] paragraph 11.

⁶⁵ Roe Day 49/19/18-21.

⁶⁶ Roe Day 49/26/8.

⁶⁷ Roe Day 48/231/3-6.

⁶⁸ Roe Day 49/10/19-11/14.

⁶⁹ Roe Day 49/7/19-8/11, 26/7-8.

logged environment. He said that he had grappled with that dilemma, but had concluded that compartmentation had failed to such an extent that it was impossible to see how any flat in the building could be relied upon to provide a safe environment.⁷⁰ In his view, anyone in the building above floor 4 was “in great danger”.⁷¹

AC Roe’s strategy

- 28.80 AC Roe’s strategy was to flood the building with as many EDBA wearers as were available and to provide as much assistance as possible to the remaining occupants. The strategy was both bold and necessary. However, it meant that firefighters would be deployed into the tower without any firefighting equipment, which was both contrary to policy and created a very significant risk to their safety.
- 28.81 It was not a wholly unsuccessful strategy, in that some 36 occupants escaped from the tower between 02.53 and 08.07,⁷² including eight from floors 21 and 22 and eight from floor 18. Although AC Roe did not consider how those who had previously been told to stay put or those who were not in contact with control could be told that they now had to leave the building, his plan to send EDBA wearers into the building to assist the evacuation of all the remaining occupants was a partial solution to that problem.

7 Communication and use of FSG information

- 28.82 It is necessary to examine two particular aspects of the way in which FSG information (i.e. information from or about callers from the tower) was managed once it reached the incident ground. The first is the system for receiving and recording that information and communicating it to the bridgehead; the second is the system for recording it at the bridgehead and the manner in which it was used to implement rescues.

The system for managing FSG information

- 28.83 There were principally two, but in practice sometimes three, methods by which FSG information was transmitted from the control room to the incident ground: by radio, by an admin line call and by mobile telephone call from SM Jason Oliff to WM Meyrick. Each of these methods originally resulted in information reaching CU8 or (from around 02.20 at the latest) CU7. Sometimes all three methods were employed at the same time.
- 28.84 From the command unit the information was transmitted to the bridgehead by various means which changed over the course of time. Differences of recollection and the absence of any means of ascertaining times with any accuracy make it very difficult in the case of some FSG calls to piece together exactly how the information passed down the chain of communication and when. The best description of the basic system, such as it was, that can be given on the basis of the available information is as follows:
- CU8 arrived at 01.30.48. When it was in operation WM Meyrick received FSG information from the control room on the main scheme radio and by the admin line and passed that information by radio to WM Mark Kentfield, who was standing near the tower. WM Meyrick recorded the information he had received on a blank piece of paper. WM Kentfield wrote down on pieces of A4 paper the information he had been given by

⁷⁰ Roe Day 49/15/17-16/10.

⁷¹ Roe Day 49/12/12-13/2.

⁷² The total number of occupants escaping after the control room revoked the “stay put” advice at around 02.35 was 46.

- WM Meyrick and gave them to SM Loft. At that time there was no system in place on CU8 for collating FSG information in one place.
- b. It is not entirely clear how information passed from SM Loft to the bridgehead at this time. Until around 02.17 the bridgehead was on the second floor and in the early stages of the incident there was “an incident plan board” there. It is likely that SM Loft relayed the information using channel 3 of the fireground radio. The pieces of paper contained lists of flats and one of them may have been the so-called “Sadler envelope”.⁷³ SM Loft received two or three such sheets of paper from WM Kentfield while he was carrying out that role. It was because some of them lacked flat numbers that at around 01.49 SM Loft took a photograph of a plaque showing flat and floor numbers that was fixed to the wall of the ground floor lobby.⁷⁴
 - c. When WM Louisa De Silvo arrived at the bridgehead at 01.50 she was told to keep a record of the FSG information received by the bridgehead and was given an FIB which had a list of flats on it. WM De Silvo received FSG information directly by radio,⁷⁵ as well as by pieces of paper carried to the bridgehead by “runners” such as CM Batterbee. She kept a record of the information on the FIB. It appears that some FSG information had already been recorded on the wall of the lobby on floor 2 by FF O’Beirne before her arrival.⁷⁶
 - d. Some time after 02.10 but before 02.22,⁷⁷ CU7 was established as the designated FSG call-handling command unit. SM Egan and WM Harrison moved to it, taking with them the 30 or so pieces of paper containing the FSG information that WM Meyrick had recorded together with the plaque that WM Kentfield had by then removed from the wall of the ground floor lobby and brought back to CU8 earlier.⁷⁸
 - e. At some point shortly before 02.13 WM Kentfield instructed WM Paul Sadler to set up an “FSG point” to collate information before transmitting it to the bridgehead. WM Sadler made use of the bonnet of a car parked near the south-east of the tower as a desk. He obtained a control information form (quadruplicate) pad and a forward information board to record the information he received and sent CM Batterbee to the bridgehead to check that the FSG information held there was the same as that which he had. CM Batterbee copied the information on the forward information board at the bridgehead and recorded it in his notebook.⁷⁹ WM Sadler received FSG information from CU7 (and probably CU8 as well) both by fireground radio on channel 3 and on control information forms brought to him by runners. He then recorded that information on a control information form and sent the white top copy by runner into the tower. He used a second runner to take the yellow copy back to CU7, retaining the blue and green copies in his own possession. He also transmitted information by radio to the bridgehead. Shortly after he had started to carry out that role he saw what became known as the “Sadler envelope”, which he photographed on his mobile telephone at 02.19. He then used the photograph to transcribe the information onto control information forms.

⁷³ [MET00016967].

⁷⁴ [MET00015644]; CCTV image [INQ00000302].

⁷⁵ De Silvo witness statement [MET00010913] p. 6.

⁷⁶ [MET00013074].

⁷⁷ It was at 02.22.54 that CU7 sent the radio message to the control room asking for all FSG messages to be sent to CU7 [LFB00002301]; SIL p. 22.

⁷⁸ CCTV image [INQ00000360].

⁷⁹ [MET00015731].

- f. Meanwhile from around 02.15 WM Glynn Williams had set up a system inside the tower for recording FSG information using the wall of the ground floor lobby. WM Williams received information sent into the tower by WM Sadler as well as from CU7, wrote it on the wall and then shouted it up to WM Watson who was based on the second floor mezzanine. WM Watson then wrote down the information, originally on the mezzanine wall, but later in his notepad, and then briefed crews to go to the bridgehead for deployment in response to those FSG calls. He kept no record of which slips he had given to which crews.
- g. WM Williams did not have an Airwave radio and, due to the congestion on the fireground radios, his preference was to receive information on paper.⁸⁰ In the main he received it in the form of white control information form sheets from runners directly from CU7.⁸¹ He also received control information forms sent into the tower by WM Sadler, but it is very difficult to identify which, if any, of those seen by the Inquiry he received by that route. Indeed, WM Williams did not even know that WM Sadler was operating as an intermediate FSG link outside the tower.⁸²
- h. WM Williams recalled that when he had started handling FSG information he had seen a list of numbers that CM Batterbee had brought to him from the bridgehead which he said he had cross-checked against the FSG information he had recorded on the wall. However he did not see the “Sadler envelope” and in any event the first numbers he wrote on the wall did not match what was on it.⁸³
- i. Although WM Williams said that he attempted to prioritise responses based on vulnerability and age,⁸⁴ the information with which to do so was often incomplete and it was a matter of chance to which floors crews were sent, particularly higher up in the tower.⁸⁵ In fact, throughout the night he responded to calls in the order in which the information had arrived.⁸⁶
- j. Once WM Watson had briefed a crew, he would shout down to WM Williams the number of the flat to which he had sent it and WM Williams would write “BA” next to the flat number on the lobby wall.
- k. The results of deployments were sometimes collected by WM Williams from returning crews and where he had done so he placed a tick next to the relevant flat on the lobby wall. Much of the same procedure was used by WM De Silvo at the bridgehead, but it was unreliable due to the physical condition of many of the returning crews. In no case did WM Williams report back to CU7 the results of a deployment because it was “nigh on impossible” for him to match flats to which he had called for deployments to survivors coming out of the tower.⁸⁷

28.85 After 02.22, when the control room began sending FSG information to CU7, the communication and collation system seems to have been as follows:

⁸⁰ Williams Day 31/62/13-64/10 and Williams witness statement [MET00008045] p. 7.

⁸¹ Williams Day 31/67/22-68/3, 69/9-23.

⁸² Williams Day 31/76/14-15, 129/4-8.

⁸³ Williams Day 31/77/18-79/13.

⁸⁴ Williams Day 31/57/12-19.

⁸⁵ Williams Day 31/59/14-60/2.

⁸⁶ Williams Day 31/166/9-20.

⁸⁷ Williams Day 31/107/8, 172/1-6.

- a. WM Antony Peckham received FSG information from the control room by main scheme radio channel 4; he wrote the details down on control information forms, which he passed to other officers in CU7.
- b. WM Meyrick continued to speak to SM Oliff in the control room by mobile telephone and transmitted the information he received by fireground radio to WM Sadler in place of WM Kentfield, who had left for CU8 at around 02.30.
- c. Information was also carried directly to the bridgehead from CU7 by runners, such as WM Shaun Coltress and FF Mandeep Singh; it was also carried to WM Williams in the ground floor lobby, sometimes via WM Sadler. At around 04.00, SM Peter Wolfenden, who by then was assisting WM Williams, established a clear radio link to CU7. He received FSG information by that radio link and recorded it on the white wall of the ground floor lobby.⁸⁸ It is not clear why a direct radio link had not been established earlier. WM Williams was confident that any FSG information that reached him had been sent to the bridgehead, although there is no way of verifying that.⁸⁹ Certainly, not all FSG information did go to him; for example, FF Singh noted some FSG information on a piece of paper from his firefighter's notebook showing "15th floor 122 x2 people x 2 dogs".⁹⁰ That piece of paper was not seen by WM Williams and the information was not added to the wall of the ground floor lobby.
- d. It is possible that within CU7, FSG information was from that time also recorded on the laminated board in CU7,⁹¹ which was replaced with the grid whiteboard system from around 03.00.⁹² Although WM Williams did not send any information back to CU7, GM Goodall on CU7 did receive the results of some deployments, because once his grid system had been set up he was able to record whether BA wearers had gone to particular flats.⁹³ That information came from runners coming back to CU7 or by radio to SM Egan or from information obtained from rescue centres later in the night. However, the evidence about that is very unclear.⁹⁴ WM Harrison recorded the information on the whiteboards.

28.86 After the bridgehead had moved up to the lobby on floor 3 at around 02.17, WM De Silvo gave up using a forward information board to record FSG information and began using the lobby wall.⁹⁵ She put a tick against a flat to show that it had been visited, a circle indicated that further information had been received and a cross through the flat indicated that it had been searched and a rescue carried out.

28.87 After the bridgehead had moved down to the ground floor lobby at around 03.10, the system continued in substantially the same way: FSG information was passed by WM Williams or SM Wolfenden to WM Watson, who passed it to GM Welch and GM Patrick Goulbourne at the bridgehead, which was by then at the foot of the stairs by the green wall. FSG information was recorded on the green wall there by WM De Silvo and others.

⁸⁸ Williams Day 31/153/4-20.

⁸⁹ Williams Day 31/158/8-11.

⁹⁰ [MET00013089]; Williams Day 31/160/15-161/6. That was a reference to Steven Power, the resident of Flat 122. That flat was referred to with the information "smoke-logged" in the middle column of his wall list. WM Williams said that that came from the command unit (which was CU7): Williams Day 31/162/9-22.

⁹¹ For example, [MET00015930]. This could in fact have come over from CU8.

⁹² [MET00015934].

⁹³ [MET00015924].

⁹⁴ Goodall Day 35/80/3-81/18.

⁹⁵ [MET00015819].

Defects in the system

- 28.88 It will be readily apparent from this broad and necessarily incomplete summary of what occurred that successive incident commanders and others responsible for managing FSG information failed to establish a clear and efficient system at the incident ground for receiving, recording and transmitting such information to the bridgehead and recording the results of deployments to individual flats. Far too much was left to the initiative of individual officers, who improvised methods of handling information that were disorganised and, in some cases, inconsistent with each other. Individual officers worked extremely hard to implement as good a system as they were able to devise under very difficult circumstances, but the fact remains that they were acting on their own initiative and with very little understanding of how their roles fitted into the wider chain of communication. As a result it is very difficult to trace the movement of any particular piece of FSG information from the point at which it reached the command unit⁹⁶ to a deployment from the bridgehead.
- 28.89 That deplorable state of affairs can be attributed to a number of factors. First, there were at least two, and possibly three, separate lines of communication between the control unit and the ground floor lobby, where a separate position had been set up for collating and managing the information. Although that may have reflected in part the fact that there were two or three lines of communication coming into the command units from the control room, that did not justify the officers on the command units in sending FSG information to the tower by different means and by different routes. No one appears to have noticed that that in itself posed a risk of duplication and loss of information and therefore no one attempted to impose some order on it. It continued all night: there was never a time when a single line of communication was established by which all FSG information travelled from CU7 to the bridgehead. As a result, the officers at the bridgehead continued throughout to receive FSG information both by radio and on slips of paper.
- 28.90 Secondly, there were too many links in the chain between the command units and the bridgehead. It is hard to know whether WM Sadler's activities outside the tower helped or hindered the management of FSG information, but it created a risk of confusion and duplication, particularly because there were at certain times two routes by which FSG information was being passed to him by the control units. Moreover, he communicated with the tower both by radio and by the use of runners to carry sheets of paper, which increased that risk yet further.
- 28.91 Another link in the chain was the introduction of WM Williams receiving and recording information at the ground floor lobby wall. WM Williams' record was only as good as the information that he had received, which came from at least two sources: on paper from WM Sadler or CU7 and later in the night by radio. To add to the confusion, some information on paper went by runner directly from CU7 to the bridgehead without going past WM Sadler or WM Williams and was therefore not recorded by either of them.
- 28.92 Thirdly, at no stage was the bridgehead in direct contact with either command unit. The evidence about the source of the information recorded on the walls of the lobbies on floors 2 and 3 where the bridgehead was located was not clear, other than that those sources did not remain constant. Again, the reliability of information reaching the bridgehead depended on the last link in the chain.

⁹⁶ Which is itself difficult to link with particular 999 calls coming into the control room.

- 28.93 The variety of methods used to record FSG information on the relevant command unit and on the incident ground meant that it was not possible to keep track of what was coming in, let alone what was going out. That meant that if anyone had wished to check with the command unit whether an FSG call from a particular flat had been passed to the bridgehead, it would not have been possible to do so until after the grid system had been established after 03.00. Even then there was no record of when the relevant information had left the command unit, where it had gone and by what means. The use of control information forms on the incident ground (although required by the terms of PN790)⁹⁷ did not make things any easier, as an attempt during the hearings to trace the movement of some of the information on WM Sadler's control information forms to WM Williams' wall attested. In these circumstances, any tried and tested method of recording information would have proved problematic and human error was likely.
- 28.94 Fourthly, there was no overall command structure from the outset. During the first hour of the incident many officers decided for themselves what tasks to perform or to whom to delegate tasks. A good example of that is the way that the links in the chain developed. WM Kentfield decided to instruct WM Sadler to pass messages to the bridgehead but left it to WM Sadler to devise a system for doing so. SM Loft had agreed with WM Dowden that he would take overall responsibility for managing FSG information, so he should have regarded himself as an FSG co-ordinator as contemplated by paragraph 7.6 of PN790, which required him to "collate, record and retain all the information on FSG calls received". Although that may in practice have been an impossible task for one officer, given the volume of FSG information constantly coming to the incident ground, the function still needed to be carried out. There was never any attempt to establish a coherent and all-embracing system for gathering and communicating FSG information under the supervision of one officer. A stark illustration of the absence of effective command and control was the fact that it was not until around 02.41 that DAC O'Loughlin discovered the number of FSG callers still in the tower, which came as a surprise to him.
- 28.95 Fifthly, many of the physical or electronic systems on the command units were not working, such as the CSS and the heli-tele downlink. According to paragraph 7.4 of PN790, the CSS was meant to be used to record messages sent to and from the incident ground, including messages sent by radio relating to FSG calls. Had the CSS worked, it would have given the officers on the command units access to the VISION system maintained by the control room, which included some of the FSG information being received, and to other tactical and command decisions made by senior officers. Remarkably, even before the Grenfell Tower fire, the CSS system had never worked at larger incidents involving more than six pumps. It had a history of unreliability and, despite attempts to get it to work on the night of the fire, it could not be started up.⁹⁸ The heli-tele downlink from the NPAS helicopter also failed to function, a matter to which I refer in detail elsewhere. Other technology, such as Toughbooks, Meshnode and the "striker camera" with which the command units were equipped did not work either.⁹⁹ Due to these equipment deficiencies, some of which had been well-known within the LFB for some time, the officers on CU8 and CU7 were deprived of ready access to vital information about FSG calls (the details of some of which were on VISION in the early part of the incident), conditions in or outside the building, and command decisions. Why the LFB was deploying emergency equipment which did not work in accordance with its own policy requirements is a question which will be examined further at Phase 2.

⁹⁷ PN790, paragraphs 5.7 and 7.1.

⁹⁸ Johnson Day 37/7/20-11/11.

⁹⁹ Johnson Day 37/5/8-15/3.

- 28.96 Lastly, but most fundamentally, there was poor and sporadic communication by the bridgehead to the improvised link points in the FSG communications chain or to the command units of information about the results of deployments to particular flats and no communication at all of such information to the control room. The “information loop” from the control room, to the command units, to the bridgehead, to the command units and back to the control room was never completed.¹⁰⁰ That was contrary to PN790, in particular paragraphs 7.10 and 9.1 and 9.3, which emphasise in clear terms the “vital” need for control to be kept informed of the actions being taken to resolve each call. AC Roe, at least, recognised that “the closing of that loop is a very important part of FSG”.¹⁰¹ The failing was particularly serious in this case. The failure of the incident commander, or anyone else, to tell the control room that the fire had spread well beyond the flat of origin meant that the CROs continued to give wrong information and advice to callers because they had no means of knowing whether the advice that they were giving callers was appropriate to the conditions in the building, or whether their frequent assertions that the firefighters were on their way were well-founded or not. It also meant that neither the officers on the command units nor the incident commander had any idea whether individual crew deployments into the tower had been successful and if not, why. There was an attempt at both the bridgehead and by WM Williams in the ground floor lobby to gather that information from returning firefighters and evacuees, and the results were recorded where they could be. Indeed, in the vast majority of cases at least one of the crew members recalled some kind of debriefing at the bridgehead. However, although some information did start coming back to CU7 after around 03.00, once GM Goodall had taken over command of it and had established his whiteboard grid, it was late and piecemeal. No information about the result of deployments was passed back from CU7 to the control room. At no stage was CU7 able to communicate basic details of the fire to the control room. Even rudimentary information about the progress of the fire through the tower would have assisted the CROs to form a collective understanding of the gravity of the incident at an early stage. In the absence of even basic information CROs were left to piece together a confusing and often incomplete picture.
- 28.97 Although it is plain that the number of FSG calls and the constantly developing information from callers represented a significant challenge to the officers on the fireground,¹⁰² that challenge was not insurmountable with the tools that were, or should have been, at their disposal. What was required was a single system of collating FSG information on the relevant command unit, a single and consistent line of communication to the bridgehead, and a single system for ensuring that the results of deployments were communicated to the command units and from them back to the control room. The fact is that the LFB was unprepared for an event involving a large number of FSG calls, despite the lessons which were said to have been learnt from the Lakanal House fire. In short, the LFB failed to put in place an adequate system on the incident ground for handling FSG messages.

Some consequences of the defects

- 28.98 The chaotic nature of the communication links meant that neither the control room nor the command units nor the incident commander could know whether rescue attempts had been made in response to calls, or if they had, what had been the outcomes.

¹⁰⁰ For example, Goodall Day 35/120/10-123/9.

¹⁰¹ Roe Day 48/247/3-4.

¹⁰² As GM Goodall explained in his evidence at Day 35/120/10-123/9.

- 28.99 In particular, the fact that neither the incident commander nor the control room had access to any reliable information about the results of rescue missions meant that, when it became necessary to deploy crews for a second time, the bridgehead did not have all the information needed to brief them properly. It also meant that CROs in the control room could not have regard to the results of earlier deployments when deciding what advice to give callers.
- 28.100 It is not possible to catalogue comprehensively all the consequences for particular individuals or flats or floors of the inadequacies in the systems for handling FSG call information, but two in particular call for comment as being illustrative of a broader picture.

The top floors

- 28.101 Mariem Elgwahry and Naomi Li called the control room (separately) to report a fire on floor 22.¹⁰³ A service request reflecting those calls was entered at 01.32.29.¹⁰⁴ Furthermore, OM Norman spoke to WM Meyrick on CU8 on the admin line at 01.35.24 to tell him that smoke was coming in on the top floor where Mariem Elgwahry and her mother Eslah Elgwahry had by then taken refuge. The “Sadler envelope” contained references to Flats 204 and 205 on floor 23 and Flat 195 on floor 22, but a crew was not deployed to floor 23 until 02.08, when FFs John Wright, Scott Bell and Zade Alassad tallied out.¹⁰⁵ In the event, that crew was diverted at floor 10 by the discovery of casualties coming down and as a result did not reach floor 23. There were no further deployments to floor 23 until 02.24 (CM Richard Evans and FF Gemma Bloxham) and 02.51 (FFs Michael Pole, Chris Cheesman and Niki Mitchell, who in fact went to floor 18). There was no deployment to floor 22 until 03.03, just after Naomi Li and Lydia Liao had started to escape, when CM Raoul Codd and FF John Joseph tallied out under instructions to go there. No firefighter ever did reach floor 23, and CM Codd and FF Joseph did not reach floor 22.

The family in Flat 142

- 28.102 Kamru Miah, Rabeya Begum, Mohammed Hanif, Mohammed Hamid and Husna Begum lived in Flat 142 on floor 17. All five members of the family died in the fire. The relevant communications can be identified as follows:
- At 01.29.02 Husna Begum was connected to MetCC after calling 999. She reported that smoke was entering their flat and that they could see flames from their window. The MPS operator told them that they had spoken to the LFB and that someone was coming up to help them.¹⁰⁶
 - At 01.38.02 MetCC contacted the LFB control room and told them that smoke was coming into Flat 142 on floor 17 and that there were five people in the flat.¹⁰⁷
 - That information was passed to CU8 at 01.43.14 by OM Norman on the admin line, together with information relating to other flats.¹⁰⁸ The timing may explain why the information was not on the “Sadler envelope”, which was probably created before 01.40, but it does not appear from the evidence that it was recorded on any piece of paper that went into the tower. It does not appear among the early information recorded on the white ground floor lobby wall after 02.15 either. WM Meyrick may have passed the

¹⁰³ [LFB00000310]; [LFB00000311].

¹⁰⁴ SIL p. 18.

¹⁰⁵ [MET00013074] contains a photograph of the FSG information on the wall of the floor 2 lobby showing Flats 201 and 205.

¹⁰⁶ [INQ00000264].

¹⁰⁷ [LFB00000668].

¹⁰⁸ [LFB00002726].

- message to WM Kentfield, who delegated the task of sending it to the bridgehead to another Watch Manager, probably WM Sadler.¹⁰⁹ Indeed, the words “17th Fl, 142 FSC” do appear on the wall of what is likely to be the second floor mezzanine, where the bridgehead was sited before it moved up to floor 3 at 02.20. However, no deployment was made to floor 17 before 02.20, despite the fact that the information had reached the bridgehead, and by that time the best chance of rescuing the family in Flat 142 had been lost. It is possible that the information was lost in the move of the bridgehead to floor 3, since it does not appear on the wall on the third floor or on any forward information board of which I have seen evidence.
- d. At 02.27.12 Husna Begum was connected to the LFB’s control room. She told CRO Heidi Fox that they had been waiting for an hour, that the fire was right next to their window and that they were afraid that they were going to die.¹¹⁰ CRO Fox took the flat and floor number and the number of people present and told them that they were not going to die and that she would pass the information to the command unit.
 - e. At 02.29.31 CRO Fox created a service request on the VISION system asking for a radio message to be sent to CU8 relating to Flat 142 and saying: “five adults including 2 elderly persons inside flats”. At 02.30.42 CRO Sharon Darby sent the message to CU7 by radio,¹¹¹ it appeared as a service request on VISION at 02.31.07. It is not possible to say what happened to that information once it had been received by (at that stage) CU7. Since it was sent by radio, it would have been received by WM Peckham, who made a note of it on a control information form,¹¹² but there is no evidence about whether he then transmitted it, and if so, to whom.
 - f. Flat 142 appears on a laminated whiteboard on CU7 in a photograph taken at 02.59 showing what looks like 8 (or possibly 7) people as being present, corrected possibly to 5,¹¹³ and indeed there is evidence that it was already on that list at 02.32.¹¹⁴ Accordingly, it is clear that by that time the message had got through to CU7 that Flat 142 was the source of an FSG call. The laminated whiteboard might have been brought across from CU8 to CU7 by WM Harrison, but, given the low position of Flat 142 on the list, is likely to have been put there after the move to CU7 had been made. Accordingly, the reference to Flat 142 on the laminated whiteboard probably resulted from Husna Begum’s call at 02.27.12.
 - g. At that time the bridgehead was on floor 3. Flat 142 does not appear on the list of FSG information kept by WM De Silvo on the wall of the lobby on floor 3. The list on that wall contains a gap for floor 17 which was still there when the bridgehead was moved to the ground floor at around 03.10. There is no evidence that the information contained in Husna Begum’s call from Flat 142 at 02.27.12 had been communicated beyond CU7. It is possible that it was captured by the photograph of the whiteboard taken by WM Thomas Furnell which he then showed to WM Sadler who made a note of it.¹¹⁵ It is likely that this was the photograph taken at 02.59 which WM Furnell recognised when giving evidence. If that is so, the information taken from the call at 02.27.12 was received by WM Sadler at some time after 02.59.

¹⁰⁹ [MET00023051] pp. 13-14.

¹¹⁰ [LFB00000354].

¹¹¹ [LFB00002784].

¹¹² [LFB00001955] p. 12.

¹¹³ [MET00015930].

¹¹⁴ According to Inspector Thatcher’s body-worn video.

¹¹⁵ Furnell witness statement [MET00008022] pp. 4-5.

- h. Husna Begum and her brother made a further 999 call which was taken by CRO Yvonne Adams at 03.09.18.¹¹⁶ She said that there were five people in the flat and that there was fire in the kitchen and hallway of the flat. CRO Adams advised her to “make a run for it”. There is no record of this call being passed to CU7.
- i. At 03.18.45 Husna Begum made a further call and spoke again to CRO Fox, who advised the family to leave.¹¹⁷ The caller said that they were unable to do so and that there were five people in the flat. CRO Fox said that she would “tell them on the radio”. There is no entry on the SIL of any service request to that effect and no other record of any such radio call.
- j. However, Flat 142 appeared as an entry low down on SM Oliff’s second whiteboard and therefore it is likely that the information was transmitted by him by mobile telephone to WM Meyrick on CU7 at some point after around 02.33 when the control room whiteboards had been set up and had started operating. It is possible that that entry recorded the call to CRO Fox at 02.29.31 (in which case it was duplicated with CRO Darby’s radio message), but it is much more likely, in view of its low position on the second whiteboard, that it reflected one of the later calls made by Husna Begum at 03.09.18 and 03.18.45. At both of those times SM Oliff was still speaking to WM Meyrick on his mobile telephone.¹¹⁸ Flat 142 also appears on the whiteboard grid on CU7,¹¹⁹ showing five persons and a “P” for priority, which might indicate the presence of elderly persons.¹²⁰ The photograph of the whiteboard grid was taken between around 03.15 and 04.00. It is therefore at least possible that it recorded the FSG information contained in Husna Begum’s call at 03.18.45. That is also consistent with WM Peckham’s notation of Flat 142 on the yellow sheet of a control information form at 03.23 showing five persons in Flat 142.¹²¹
- k. CU7 received information that there were five people in Flat 142 and entered it in the whiteboard grid. The information may have come from the MPS, because there was an MPS memo referring to Flat 142, floor 17 and six people.¹²² However, on balance I think it more likely that the information reached WM Meyrick on CU7 from SM Oliff in the control room by mobile telephone and was then recorded by one of the officers on the whiteboard grid and also by WM Peckham on the yellow control information form. (Matters are confused by the fact that on a blue copy of the relevant control information form somebody has superadded “8 people”).¹²³
- l. Critically, however, the information received by CU7 does not appear to have reached the bridgehead until later. By the time Husna Begum made her last call at 03.18.45 the bridgehead had moved to the ground floor. It appears that the information about Flat 142 did reach WM Williams at some time after 04.00,¹²⁴ because it appeared on the right-hand part of the wall in the box for floor 17.¹²⁵ The inscription “142” also appears on the green wall on the ground floor by the bottom of the stairs (the location of the

¹¹⁶ [LFB00000408].

¹¹⁷ [LFB00000419].

¹¹⁸ On the call lasting 1 hour and 35 mins starting at 02.44.

¹¹⁹ [MET00008663].

¹²⁰ The information about there being elderly persons was not given in the call at 03.09.18 but only in the call at 03.18.54.

¹²¹ [LFB00001955] p. 13.

¹²² [LFB00001968] p. 11.

¹²³ [LFB00001955] p. 14.

¹²⁴ [MET00005776].

¹²⁵ WM Williams said that the right-hand grid format on the white lobby wall was not put up until the latter stages of the incident, between 04.00 and 04.30: Williams Day 31/101/6-103/6.

bridgehead) in a photograph taken by GM Michael Mulholland at either 04.45 or 04.49.¹²⁶ It is not clear when it was put there.

- 28.103 This intricate tracing exercise shows that the information obtained from the 999 calls from the family in Flat 142 was successfully transmitted from the control room to the command units but got lost thereafter in the subsequent morass of communications on the incident ground. The information contained in the final call was probably communicated to the bridgehead at some point, but, whenever that was, it was too late. The last deployment of crews who were able to reach floor 17 or above involved FFs Mitchell, Cheesman and Pole, who were deployed to floor 23 between 02.51 and 02.53. They stopped at floor 18 and helped evacuate occupants in Flat 153 when they realised they did not have sufficient air to reach floor 23. The last chance of rescue for the family in Flat 142 lay in the timely communication to the bridgehead of the information provided in Husna Begum's second call at 02.27.12 and its being acted upon swiftly. The information did eventually arrive, but there is no evidence that it was acted on.
- 28.104 I doubt that the family in Flat 142 were an isolated case, but their experience reflects a fundamental failure of command and control. It demonstrates that at no stage did any incident commander ask themselves whether every FSG call of which the relevant command unit had been informed had led to a deployment from the bridgehead, and if not, why not. Nor did they ask themselves whether the control room had been informed of the results of such deployments. Had any incident commander, or anybody charged with responsibility for handling FSG calls, asked those questions, it might have been possible to establish a better and closer link between control room, command unit and bridgehead in both directions. It might also have been possible to prompt an early review of the FSG communications structure and, more importantly still, the overall strategy.

Deploying crews in response to FSG calls

- 28.105 The approach adopted by successive incident commanders was one of making deployments in response to individual FSG calls, as opposed to devising and applying a strategy relevant to the whole building. Overall, of the 17 deployments to flats from which FSG calls had been made only three were wholly successful. Two were partly successful, in that some occupants were rescued, and 12 were unsuccessful. It is useful to break this overall picture down by reference to different phases of incident command.
- 28.106 During the first hour, when WM Dowden was incident commander, no organised deployments were made in response to the mounting number of FSG calls. I bear in mind that until 01.50 little or no FSG information had reached the bridgehead but that in itself is an indication that the system for transmitting FSG information was still in the process of being established and was not functioning fully or effectively during that period. The three crew members that went to floor 20 to rescue Jessica Urbano Ramirez (CM Christopher Secrett and FFs David Badillo and Christopher Dorgu) were acting on their own initiative in response to information that FF Badillo had received from Jessica's sister rather than any FSG information. Similarly, CM Tillotson's crew, who ultimately rescued Sharon Laci and her daughter from floor 9, were acting, as I have found, under instructions from CM Tillotson himself rather than on any specific briefing from the bridgehead. None of the other crews deployed during that period was instructed to search and rescue above floor 5, and the five-member Paddington

¹²⁶ [MET00018739].

EDBA crew was sent to the roof of the tower in a vain attempt at firefighting. No crews were deployed to floors 22 or 23 despite the fact that CU8 had received FSG information relating to floor 23 at 01.35.24, and that both appeared on the “Sadler envelope”.

28.107 In the hour or so between WM Dowden’s relinquishing incident command at 01.50 and AC Roe’s assuming it at 02.44 the approach of responding to individual FSG calls remained the same. That approach was only minimally successful. In summary:

- a. It resulted in fully successful rescues from only two flats to which the crews that rescued the occupants had been deployed: Flat 95 on floor 12 (Roy Smith and his family) and Flat 9 on floor 3 (David Lewis and Mariko Toyoshima-Lewis).
- b. It resulted in partly successful rescues from two flats to which the crews that rescued the occupants had been deployed: Flat 175 on floor 20 (a child) and Flat 113 on floor 14 (Rosemary Oyewole and Oluwaseun Talabi and their daughter, and Omar Alhaj Ali). However, four occupants from Flat 175 and four occupants from Flat 113 were not rescued.
- c. The rest of the deployments resulted in the evacuation of occupants other than those of the flats to which they had been deployed, normally as a result of crews coming across casualties from other floors on the way to their assigned destinations.
- d. Only one EDBA crew was deployed during this period to carry out a rescue, namely FF Tom Reddington and FF Nikki Upton, who were briefed to go to floor 21 but failed to reach it because (at some point) they met Malak Belkadi and helped to take her out.
- e. Of the 17 SDBA crews deployed from the bridgehead in that period 13 reached the floor to which they had been sent.¹²⁷ A further crew reached floor 3 as instructed (FFs Oliver Desforges and Wright) but they were then instructed to go to floor 24, which they did not reach.

28.108 It appears that at no stage did the officers at the bridgehead communicate the results of these deployments, or even the overall outcome of the strategy, to CU8 or CU7 or to the incident commander (principally DAC O’Loughlin during this period), nor did the incident commander seek to obtain the information for himself. Certainly, the control room never received any information of that kind. It showed that deployments were not being carried out, either because of an insufficiency of EDBA wearers (although CM Evans and FF Bloxham may have got up to between floors 18 and 20 after 02.20), or because crews were being diverted on the way up by deciding to rescue people they encountered on the stairs instead of making their way to the flats or floors to which they had been deployed. There was also a marked slowing of deployments above floor 14 between 02.15 and 02.44, with only four deployments to those floors.¹²⁸ The control room did not receive any of that information.

28.109 After AC Roe assumed command at 02.44 there were no successful rescues from flats to which crews had been deployed in response to FSG information.

- a. Very few SDBA crews reached the floors to which they had been despatched and they carried out no rescues from any of them. Only one SDBA crew appears to have reached floor 15 (FFs Ricky Nuttall and Leon Whitley, deployed at 02.44).

¹²⁷ This included the West Hampstead crew of FFs Brian Flanagan and Luke Cook who were sent to take hoses to floor 20. They made it to that floor and did random “door knocks” on the way down (on floors 17 or 18) but did not evacuate anybody: Flanagan witness statement [MET00007765] pp. 5, 6.

¹²⁸ CM Evans and FF Bloxham to Flat 205 at 02.20; FFs Nuttall and Whitley to Flat 122 at 02.44; FFs Upton and Reddington were deployed at 02.44; and FFs Cheesman, Pole, Jessamine Bate and Mitchell were also deployed by 02.53.

- b. There were numerous floors on which rescues were carried out by crews who had been sent to other floors, for example:
 - i. FFs Reddington and Upton, who had been sent to floor 21, rescued Malak Belkadi in the stairs.
 - ii. FFs Richard Peacock and Matthew Harold, who had been sent to floors 5 and 6, assisted casualties on floor 7.
 - iii. FFs Paul Gray, Benjamin Holehouse, Gary Hiscock, Alan Hudson and Daniel Pegram, who had originally been despatched to floor 9, but had been diverted by radio to floor 11, went to floor 10, where they carried out a rescue.
 - iv. After the bridgehead had been moved to the ground floor at 03.17, the first crew despatched (CM Aldo Diana and FF Dean Nelson, an EDBA crew) was briefed to go to floor 16, but got only as far as floor 13. After that there appear to have been no deployments above floor 11.

28.110 Those are no more than examples of the way in which deployments failed to reach their objectives, but they are sufficient to enable some clear conclusions to be drawn. Deployments in response to specific FSG information intended to rescue occupants from particular flats were largely failing. A number of people were rescued from other flats and from other floors, particularly occupants who had left their flats, and that pattern increased during AC Roe's time in command after the "stay put" advice had been revoked and EDBA crews began to be sent up the tower in any numbers from around 03.20. However, it should have become apparent at an early stage that attempts to rescue individuals from specific flats in respect of which there was reliable FSG information at the bridgehead was not succeeding, because of a shortage of EDBA wearers and because many crews were taking it upon themselves to depart from their instructions in order to assist occupants who had left their flats. In addition, revised instructions were given to crews by radio after they had been deployed, without any records being made.

28.111 A strategy of deploying crews in response to FSG calls at a time when occupants were already leaving the building on their own initiative was, viewed objectively, always likely to have limited success because for understandable reasons crews were likely to depart from their instructions in order to assist occupants that they met on the stairs. Given the inevitably chaotic circumstances, the unreliability of communications between the bridgehead and firefighters and the absence of instantly available replacement crews, the consequence of the strategy pursued by successive incident commanders was that occupants who might have been rescued were not.

28.112 Moreover, although in some cases returning crews were debriefed at the bridgehead, in the vast majority of cases the information they gave was of doubtful reliability because the firefighters were exhausted and in many cases suffering from the effects of heat stress. Many were incapable of speaking coherently and many were in urgent need of oxygen and water. There was no comprehensive or wholly reliable system at the bridgehead for recording information obtained from returning crews or the results of deployments. That in turn meant that the officers at the bridgehead had no reliable means of measuring the success or failure of the strategy. They appear never to have grasped the fact that most of the occupants who had managed to leave the tower had done so largely without assistance or that those who had been assisted to leave had not come from the flats (or often even the floors) to which crews had been sent.

- 28.113 Finally, it is necessary to point out that the effectiveness of the strategy of deploying crews in response to specific FSG information depended critically on the bridgehead not only receiving accurate and timely FSG information but also on its acting on it promptly. There are a number of cases where that simply did not happen, either because the bridgehead acted on unsound information or because it failed to act on sound information. For example, at 04.04.37 SM Cook and CM Ben Gallagher were deployed to investigate reports of 10 people trapped on floor 16 and 11 people trapped on floor 18. The officers did not reach those floors, but they should not have been sent to them at all, because the reports, which cannot be traced to any 999 call or related FSG information, were wrong. It is of course possible that the information came from friends and family outside the tower passing messages to the LFB at various points (such as at CU7), but that only serves to highlight further the absence of a robust system for the flow of reliable FSG information to the bridgehead.
- 28.114 Flat 113 provides a tragic example of the failure of the bridgehead to act on sound FSG information. After FF Peter Herrera had returned from his deployment to Flat 113 Omar Alhaj Ali told him that he had not rescued all the occupants. FF Herrera passed that information to WM Williams and WM De Silvo, and CM Jamie Mayne and FF Marcus Lundquist were briefed by WM Williams or SM Wolfenden to rescue a woman and child in Flat 113. However, their instructions were changed at the bridgehead and they were sent to fight the fire on floors 3 and 4. It is not clear who at the bridgehead changed their instructions, or why; nor is it clear why CM Mayne and FF Lundquist did not press the case for carrying out the rescue or whether the officer at the bridgehead even knew that he or she was deploying a crew who had already been instructed to carry out a rescue. It is also a mystery why an EDBA crew was deployed to fight the fire low down in the building, a point that exercised CM Mayne at the time but which he felt constrained by his junior rank from raising with the more senior officers at the bridgehead. Since it is highly unlikely that any bridgehead commander would deliberately have preferred to use an EDBA crew to fight the fire low down in the building¹²⁹ instead of rescuing occupants on a higher, but probably reachable, floor, the decision was probably not deliberate. The decision to redeploy CM Mayne and FF Lundquist and the confusion surrounding it reflects a failure to process FSG information in a systematic way at the bridgehead (at least by around 03.25) and an absence of a robust command structure there.

8 The use and misuse of EDBA

- 28.115 There were deficiencies in the management and use of EDBA resources on the incident ground in the following respects:
- The first EDBA crew was deployed for firefighting purposes in pursuance of an objective that it failed to achieve and should have been recognised at the time as unrealistic.
 - There was a failure to identify the need for EDBA resources at an early stage and to take appropriate measures to obtain them.
 - There was a failure to deploy the EDBA resources that were in attendance promptly after their arrival.
 - There was a failure to establish a system that ensured that EDBA resources were used for the purpose of rescues on the higher floors of the tower.

¹²⁹ Indeed, GM Goulbourne's evidence was that he would not have deployed an EDBA crew to floors 3 and 4: Day 41/175/8-176/12.

Paddington A216 crew: the “roof” mission

- 28.116 The nature and circumstances of WM Dowden’s briefing of Paddington’s FRU crew, the first EDBA crew to arrive at the scene at 01.35, has been described elsewhere. When he gave evidence WM Dowden very candidly accepted that in hindsight the task was never going to succeed due to the speed at which the fire was spreading. He also had no information about the layout of, or access to, the roof. Deploying the crew in that way was not a good use of valuable EDBA resources, which could have been deployed to carry out search and rescue operations on the higher floors of the tower or sent to specific flats in response to the FSG calls which by that time had already been received.

The need for increased EDBA resources

- 28.117 The need for EDBA crews was caused by the extent to which fire and smoke were spreading inside the tower and the locations within the tower from which FSG calls were being made. As a result of these factors SDBA crews were running low on air during their deployments and were struggling to complete them: see, for example, the deployments of FF Geoffrey Campbell and FF Steven Mills, who were unable to reach floor 20 and had to turn back.
- 28.118 The fact that this incident required, or was likely to require, a significant number of EDBA wearers was apparent by the time the request to make pumps 20 and for two FRUs was made at 01.29. By that time the following had taken place:
- CM Jamal Stern had sent an urgent radio message to the bridgehead from the lobby on floor 6 saying that there was smoke and fire there and that firefighting media were needed. As a result, WM O’Keeffe immediately contacted WM Dowden to tell him: “The fire’s jumping”.
 - Externally, the fire could be seen to have reached floor 23 and to be developing with a ferocity that WM Dowden described as “just relentless”.
 - The control room had received six 999 calls from residents inside the tower, including reports of fire and smoke on the upper floors of the building.
 - WM Dowden had seen a number of residents leaving the tower showing signs of smoke inhalation.
- 28.119 These factors, and specifically the reports of rapidly deteriorating conditions within the building that the bridgehead had received by 01.29, had already led WM O’Keeffe to expect the need for many rescues and to seek to implement a strategy accordingly. However, at that time no officer appears to have recognised that the location of those who needed to be rescued and the extent to which fire and smoke had spread within the building presented particular challenges to SDBA crews. The need for a greater number of EDBA wearers than would be provided by the two FRUs that WM Dowden had requested could and should have been recognised by that time. Despite that, it does not appear to have been discussed during the handover between WM Dowden, SM Walton and DAC O’Loughlin. When GM Welch understood that he was taking over from SM Loft, he was aware that there were some EDBA wearers present, but he likewise took no steps to establish how many or to call for any more.
- 28.120 Subsequently, WM O’Keeffe did seek to increase the number of EDBA wearers at the incident when he asked GM Welch to request “all the EDBA in London”, when he arrived at the bridgehead shortly after 02.10. It is not clear whether that exchange between WM O’Keeffe and GM Welch prompted the request that was sent on behalf of DAC O’Loughlin by CU8 at 02.11 for six FRUs, or indeed that which was sent at 02.16 for 10 FRUs, but that does not

matter. The decision to request more EDBA resources was correct but the additional FRUs did not begin to arrive at the incident ground until 02.29.¹³⁰ That was over an hour and a half into the incident and an hour after the “persons reported” message had been sent at 01.29. Those requests ought to have been made and implemented sooner.

- 28.121 GM Welch did not in fact request all the EDBA in London (even if he was responsible for the make-up messages of 02.11 and 02.16), as WM O’Keeffe had told him was necessary. That is particularly significant in light of his observation on entering the tower (and even before he had spoken to WM O’Keeffe) that BA crews would never be able to get to the upper floors and back wearing SDBA, or perhaps even EDBA.
- 28.122 It is not possible to say whether the failure to ensure attendance by additional EDBA crews at an earlier time had any direct effect on the number of casualties. All BA wearers, both of EDBA and SDBA, who were committed under air over the course of the incident encountered enormous challenges and it does not necessarily follow that more rescues would have been carried out had EDBA crews alone been used. Nonetheless, the failure to take steps to obtain more EDBA crews within the first hour of the incident was a serious omission.

Delay in deploying EDBA crews

- 28.123 A repeated pattern revealed by the telemetry data is that (with the exception of the crew which was sent to the roof to fight the fire) there was a consistent delay between the arrival of EDBA crews at the incident and their subsequent deployment to carry out rescues inside the tower. That delay is particularly remarkable in the case of the first EDBA crews on the scene, when there was a shortage of EDBA wearers. That shortage ought to have led to an effort to ensure that such resources as were available were promptly used, but it did not, as the following shows:
- Chelsea’s FRU, G346, arrived at the incident at 01.47.33. The crew was initially given the task of gathering equipment from parked appliances. FF Alan Sime also assisted in setting up Soho’s ALP. They subsequently waited for some time outside the tower to be deployed. While waiting FF Reddington stressed to SM Loft that the crew needed to be deployed as a matter of urgency and encouraged the rest of the crew to “be more proactive” in getting themselves up to the bridgehead in the absence of any instructions. The crew eventually tallied out at 02.44 (FF Upton and FF Reddington), 03.03 (CM Codd), and 03.27 and 03.29 (FF Sime and FF Ernest Okoh). The failure to deploy the Chelsea crew any earlier was due to simple lack of direction and, in particular, the lack of any system for identifying EDBA resources on their arrival.
 - Euston’s FRU, A236, arrived at 02.29.50. None of the firefighters describe doing anything in particular on arrival, apart from locating the BA holding area and finding their way to the entrance to the tower. They tallied out at 03.04 and 03.05 (FF Andrew Brooks, FF James Morcos and CM Charlie Rawlings) and at 03.05 (CM Joseph and FF Codd). That delay was less pronounced than in the case of the Chelsea crew, but in the context was nonetheless significant. Again, the delay appears to have been due to a lack of direction and the absence of an effective system of expediting EDBA deployments.
- 28.124 Meanwhile, inside the tower, while those and other EDBA crews were waiting, SDBA crews were still being deployed until around 03.03, when the EDBA deployments began in earnest. Despite the fact that the additional FRUs that had been requested at 02.11 and 02.16 started

¹³⁰ The first FRU to arrive in response to the “make FRUs 6” request was Euston’s A236 at 02.29.50: ORR p. 196.

to arrive at 02.29, only one of the nine crews deployed before 03.03 were using EDBA. It was for the bridgehead to tell SM Daniel Kipling at BA Main Control what resources were required and when, and he was always able to meet the demand.

- 28.125 It follows that the significant delays between the arrival of EDBA crews and their deployment were not caused by deficiencies in the way BA Main Control was organised. Rather, they resulted from a combination of two factors. First, there was no system for ensuring that EDBA wearers were directed immediately to BA Main Control on arrival, with the result that crews found themselves assisting with menial tasks at various other locations around the incident ground. Secondly, before 03.00 the officers at the bridgehead were failing to ensure that EDBA wearers were sent up to the bridgehead for deployment as soon as they entered the building, rather than waiting in line in the lobby or outside the entrance in the second holding area being managed by SM Loft.

Inadequate system for allocating deployments to SDBA or EDBA crews

- 28.126 Finally, there appears to have been no consistent system for ensuring that EDBA resources were used for deployments specifically to higher floors, and no system at all in the earlier stages of the incident. The bridgehead did not have a significant number of EDBA wearers to deploy to higher floors, initially (until 02.29) because there were only two EDBA crews at the incident and later (between 02.29 and 03.03), because there was no system for ensuring that EDBA crews were despatched promptly into the tower to be deployed. As a result, there was an over-reliance on SDBA crews, which were frequently deployed to carry out rescues from the higher floors of the building.
- 28.127 For example, the following crews were deployed using SDBA:
- a. FFs Campbell and Mills were deployed to Flat 175 on floor 20;
 - b. FFs Katie Foster and Gregory Lawson were deployed to floor 18;
 - c. CM Craig Eden and FF Tom Welch were deployed to floor 20;
 - d. FFs Williams and Agnel Fernandes were deployed to Flat 175 on floor 20;
 - e. FFs Cook and Flanagan were deployed to floor 20;
 - f. FFs Desforges and Mitchell were deployed to floor 21;
 - g. FFs Wright, Alassad and Bell were deployed to floor 23;
 - h. CM Evans and FF Bloxham were deployed to Flat 205 on floor 23.
- 28.128 On the other hand, the deployment of CM Mayne and FF Lundquist, an EDBA crew, to fight fires and clear floors 3 and 4 at 03.29, shows that on at least one occasion EDBA resources which could have been used in an attempt to save life were wasted.
- 28.129 All BA wearers encountered difficulties of various kinds within the tower and it cannot be said with any confidence that greater use of EDBA would have resulted in a larger number of successful rescues. However, the over-reliance on SDBA crews before 03.03, particularly for the purpose of rescue operations on higher floors, placed unnecessary strain on those firefighters when EDBA crews would have been better placed to carry out those deployments. If, earlier on, the bridgehead had employed a system for managing crews that distinguished clearly between SDBA and EDBA wearers and had allocated deployments accordingly, it could both have reduced the pressure on SDBA wearers and made better use of the available

resources. That distinction was eventually made in the form of a decision to deploy SDBA crews as far as floor 10 and EDBA crews above floor 10. It is likely that that was not until after 04.30 although it is not possible to be more precise.¹³¹

9 Communications

- 28.130 The Narrative section makes it clear that from the earliest stages of the incident the deployment of firefighters inside the tower was plagued by generally ineffective communications. Although it is not possible to identify any precise time or place, the overwhelming weight of the firefighters' evidence was that as conditions deteriorated they found that it was impossible to communicate with the bridgehead using their BARIE sets or that not long after they had left the bridgehead it became practically difficult to do so. The result was that crews could not inform the bridgehead about conditions in the stairs, lobbies and flats, about casualties they had found on their way to and from any search and rescue deployments or about the results of their deployments. Crews were unable to call the bridgehead for additional resources or advice. The difficulties with communications significantly limited the efficiency of search and rescue operations inside the tower.
- 28.131 It is equally plain that it was well known within the LFB that BARIE sets performed badly in concrete high-rise buildings. Given that knowledge, greater efforts should have been made to establish and maintain effective communications inside the tower on the night. Whether that should have been achieved by using devices such as "leaky feeders" or providing Airwave radios to all crews working inside the tower or using other technology is a matter for investigation in Phase 2, together with a broader assessment of the adequacy of the communication systems in use by the LFB.

10 Equipment

- 28.132 The effectiveness of the equipment in use by the LFB will be considered in Phase 2, but, in addition to the defective or inoperable equipment on command units that I have already mentioned, there are two particular matters that arise from the evidence heard in Phase 1 that need to be addressed at this stage.
- 28.133 First, the ALPs mobilised by the LFB to the incident ground could reach a maximum height of 32 metres, which meant that they could not reach beyond floor 10 of the tower. In a city such as London, where there is a considerable and ever-increasing number of high-rise buildings, it is obviously unsatisfactory for the LFB not to have an ALP with a reach of 42 metres, like the one made available by Surrey FRS, or even higher. It is an open question whether a 42-metre ALP could have been safely deployed earlier on the night of the fire and, if so, whether it would have helped contain the spread of the fire on the exterior of the building. The essential fact, however, is that the LFB should have been able to deploy an ALP which was capable of reaching the higher floors of a high-rise residential building. I note that following the Phase 1 hearings the LFB announced its decision to acquire new ALPs, including three with a reach of 64 metres. On any view, that decision is a welcome and necessary one.
- 28.134 Secondly, the Inquiry heard evidence about the use of secondary masks attached to firefighters' BA sets as a means of helping casualties escape from the tower and in closing statements questions were raised about the use of secondary BA sets to assist the evacuation of occupants. The Fire Officers' Association, in particular, emphasised that secondary BA sets

¹³¹ Refer to the photograph at [MET00005774]. The writing on the lobby wall "ABOVE 10 EDBA BELOW 10 SDBA" was not written by WM Williams, and he did not recall its being there before he left at around 04.30: Williams Day 32/42/3-22.

are not designed for that purpose but are intended for use in rescuing firefighters, but in any event there were not enough secondary BA sets available to make a significant difference.¹³² The use of secondary masks and secondary BA sets for the purposes of rescuing occupants is not a straightforward matter and is one that deserves more detailed consideration in Phase 2.

11 Water supply and pressure

28.135 The effectiveness of some of the equipment used by the LFB is dependant on obtaining access to adequate supplies of water at the necessary pressure. The supply of water in large quantities for the purposes of firefighting while maintaining supplies required to meet domestic and commercial requirements is a complex task. Whether there was an adequate volume and pressure of water available to the LFB for carrying out firefighting operations at Grenfell Tower is another matter that will be examined in Phase 2 of the Inquiry.

¹³² Paragraph 97 of the FOA's closing submissions (dated 6 December 2018).

Chapter 29

The Control Room

This Chapter examines the operation of the control room on the night of the fire, in particular how it handled emergency calls and communicated with the incident ground.

1 Introduction

- 29.1 It is clear that the control room was faced with, and overwhelmed by, an unprecedented number of 999 calls, which presented each member of the LFB control room team on duty on the night with a challenge wholly outside their experience and training. The magnitude and speed of spread of the fire and the volume of calls to which it gave rise presented each member of the LFB control room team on duty on the night with a challenge wholly outside their experience and training. It cannot be doubted that CROs saved the lives of many, and some of the residents of Grenfell Tower have been able to express their gratitude to the CROs who helped them. A notable example is the courage and calm of CRO Heidi Fox in coaxing Marcio Gomes and his family out of Flat 183 and down from floor 21.¹ The CROs have borne the personal consequences of that night with remarkable fortitude and the psychological cost to them must not be underestimated.
- 29.2 Nonetheless, there were serious shortcomings in the operation of the control room which cannot all be attributed to the scale of the incident, although that undoubtedly played a significant part. Those shortcomings can often be gathered only from a close examination of the ways in which individual CROs handled calls throughout the night, but they were in the main systemic in nature.
- 29.3 It is self-evident that the conclusions in Section F6 of the LFB Lakanal Report were critical of the control room's response to the Lakanal House fire. They were also strikingly prescient. Each of them applies with equal, if not greater, force to the Grenfell Tower fire. The evidence heard by the Inquiry at Phase 1 shows that, despite changes to certain LFB operational policies and the introduction of new training packages, few if any lessons were learnt by the LFB.
- 29.4 In the case of the Grenfell Tower fire, about 120 calls were received from occupants in the building in addition to the many calls made by members of the public from outside. It is clear, therefore, that the number and frequency of 999 calls, and in particular of FSG calls properly so called, was wholly unprecedented, exceeding by many times the number received in connection with the Lakanal House fire, which itself was a major event. If lessons are to be learnt for the future, however, it must be recognised that unprecedented and large-scale emergencies demanding a swift and effective response by the fire and rescue services may occur from time to time in London and other major UK cities. The circumstances surrounding the fire at Grenfell Tower and the LFB's response to it should not lead us to think that the unusual scale and speed of smoke and fire spread, the particular nature of the building and the unprecedented number of FSG calls conspired to create challenges that could not be repeated in a different form on another occasion.

¹ [LFB00055501]; Gomes Day 71/92/3-148/19; Fox Day 80/227/19-228/19.

- 29.5 One of the matters to be investigated during Phase 2 of the Inquiry is why, at least so far as the control room is concerned, the fire at Lakanal House did not lead to changes in practice and why the same mistakes were repeated in relation to the fire at Grenfell Tower. That investigation will involve an examination of the changes to policy and training programmes introduced as a result of the LFB Lakanal Report and the extent to which they achieved their objective.
- 29.6 For the purposes of Phase 1 the LFB's conclusions in the LFB Lakanal Report and the policies current at the time of the Grenfell Tower fire provide a useful lens through which to examine both the formal guidance given to CROs and the extent to which they followed it. That in turn provides the basis for a critical assessment of the response of the control room and enables a view to be taken about whether any steps should be taken immediately to improve its functioning.

2 LFB policies on managing emergency calls

- 29.7 The starting point for any analysis of the operations of the control room on the night of the Grenfell Tower fire must be PN539 and PN790, together with the "RIF for Operators" and the "RIF for Supervisors", to all of which reference has already been made. Taken together, they describe in some detail how the LFB expected CROs and senior officers in the control room to conduct operations. They should be understood in the context of the national guidance for fire and rescue services contained in Generic Risk Assessment 3.2. It is worth observing at this point, however, that the LFB has no specific policy to govern emergency calls from high-rise buildings.

Generic Risk Assessment 3.2

- 29.8 GRA 3.2 provides, at page 18:

"Fire and Rescue Authorities must also have effective arrangements in place to handle fire survival guidance calls from residents and others when they believe they are unable to leave the building due to disability, poor mobility, illness or the affects [sic] of fire.

Fire and Rescue Authorities should consider both generic procedures for persons expected, likely or advised to remain in their homes (unless directly affected by heat, smoke or fire) as well as bespoke arrangements for specific buildings.

Fire survival guidance call arrangements should include:

- details of how calls will be passed to and recorded at the incident
- their impact on resources and mobilising
- a re-evaluation process to ensure the balance of risk to the public is reviewed if circumstances change (which may result in a change to the advice previously given)
- how information will be exchanged between callers, Fire Control and commanders at the incident."

- 29.9 It also provides, at pages 28 to 29:

"Fire Control rooms may receive numerous fire survival guidance calls during a high rise incident and these calls can provide vital information, which the Incident Commander can use to locate and prioritise persons requiring rescue. Considering the life threatening circumstances, fire survival calls are likely to be extremely stressful.

Control operators may obtain more accurate information as to the location of the fire and/or persons in need of rescue or reassurance than that gathered by an Incident Commander who is on scene.

A clear record should be made of all fire survival guidance calls and relevant information on the location and circumstances of the callers. This is both at the fire service control room and at the incident ground.

This will assist in the Incident Commander's confirmation of priorities and any subsequent reassessment of those priorities should information change as the incident develops.

The advice offered to callers to remain in their property during fire survival guidance calls must be re-evaluated throughout an incident. Where circumstances make it necessary, an Incident Commander may need to consider changing the advice given. For example, callers may need to be advised to leave their property or to be guided from it by firefighters. The Incident Commander should also consider making use of all available systems within the building to communicate with occupants.

Whenever fire survival guidance calls are being received, the Incident Commander must liaise closely with Fire Control."

- 29.10 I set this text out in full because it encapsulates both the importance of CROs' obtaining accurate and detailed information from callers and the need for close liaison between the control room and the incident commander so that the latter may act upon that information.

PN539

- 29.11 Paragraphs 4.20 to 4.24 of PN539 contain, among other things, a clear recognition that emergency call-handling skills are important. As paragraph 4.20 provides:

"How effectively the emergency call is handled in terms of questioning and listening skills, capturing information accurately, creating a caring and professional experience are just some of the critical skills required for control room officers."

- 29.12 The skills are set out in paragraph 4.23: to listen, to maintain dialogue, to record "the relevant details accurately in the appropriate place on the mobilising system", to think about what information is and is not being given, and what is required to make decisions. Paragraph 4.24 of PN539 sets out basic concepts and principles and the questioning protocol in paragraph 4.25 encourages the use of open questions.

- 29.13 Fire survival guidance is referred to specifically in paragraph 5.19 of PN539, which provides:

"Detailed information, advice and guidance for control room officers is set out in accordance with Fire Service Circular 10/93 appendix A. Guidance can also be found in appendix 3 of this policy and Reference Information File (Fire Survival Guidance)."

- 29.14 Fire Service Circular 10/93, which some witnesses referred to as the "*Dear Chief Fire Officer letter*",² was a letter dated 12 October 1993 from the Home Office to the Chief Executives of County Councils in England and Wales, the Clerk to the Fire and Civil Defence Authority and the Chief Fire Officer. Its focus was the regularity and content of training of control room staff and its main purpose appears to have been to report on the review of an earlier circular issued in February 1987. Contrary to what paragraph 5.19 of PN539 says, Appendix A to Fire Service Circular 10/93 was not "information, advice or guidance for control room officers", but rather a list of topics to be covered in initial or recruit training. Its relevance to PN539 is unclear.

- 29.15 More pertinently, the text of Fire Service Circular 10/93 said:

"In the situation where, for example, the caller is prevented from escaping due to location (such as high rise flats) and/or smoke density or for some other reason is in danger, the operator taking the call may need to give very specific safety instructions in addition to establishing the location

² [LFB00003617]; for example, Smith Day 21/20/9-18.

of the incident for mobilising purposes. Additionally, in circumstances such as these a fire control operator may need to take into account that **the normal procedure of calming the caller may not be appropriate, and may even be dangerous in some circumstances.**" [Emphasis added]

29.16 Appendix 3 to PN539 is of central importance, not least because it enshrines the LFB's "stay put" advice to callers and, critically, the points of departure from it. The whole text is relevant, but the most pertinent parts are as follows:³

"The London Fire Brigade define a Fire Survival Guidance call as being a call to Brigade control where the caller believes they are unable to leave their premises due to the effects of fire, and where the control room officer remains on the line providing appropriate advice until either the caller is able to leave by their own means, is rescued by the Fire brigade or the line is cleared."

...

Brigade Control advise callers to "Get out and Stay out", however if a call is received from a High rise building where Fire, Heat and Smoke are not affecting the caller, LFB would advise that:

'You are usually safest to remain in your premises unless affected by fire, heat or smoke. If the situation changes you should leave your premises and dial 999, if you need further assistance.'

Should the caller be unable to escape, an information file containing prompts are in place on the computer-aided mobilising system to assist the control room officer in

- Providing guidance to assist the caller to safety
- Providing timely and relevant information to the attending resources
- Provide reassurance to the caller that help and assistance is forthcoming.

...

Control Room officers will always use the four principles of Escape, Assess, Protect and Rescue to provide guidance to these callers.

Firstly by assisting the caller to help identify a safe alternative **ESCAPE** route for them to leave their premises.

If this is not possible, then **ASSESS** the situation by asking the caller direct questions.

...

Begin to **PROTECT** the caller by providing current safety advice to attempt to keep the caller safe.

Reassure the caller and **REASSESS** the callers situation.

...

Control room officers will remain on the telephone with the caller and assist with **RESCUE**. [Original emphasis]

...

General

Other control room officers and supervisory staff will assist the CRO carrying out the Fire Survival Guidance call by ensuring all relevant information regarding the caller's situation is passed via both the airwave radio and via telephone when a command unit is in attendance.

Relevant information to be passed to the incident ground:

- Number of persons involved
- Names if known (by telephone only, not by radio)
- Condition of their location i.e. heavy smoke, thick smoke
- Location of caller within premises
- Callers proximity to fire

³ They are faithfully reproduced here, including the drafting errors.

- Latest FSG advice given by Control
- Time of FSG call

The callers premises number will be used as the single reference for each circumstance where guidance is provided to avoid confusion with names.”

29.17 In general terms, it is clear from this policy that there is a three-stage process in respect of a 999 call from a high-rise building:

- The working assumption is that in a high-rise building, the standing advice is that the caller should remain in their flat unless they are affected by fire, heat or smoke. Most CROs understood this to be what they called the “stay put” advice.⁴
- Once the caller is “affected” by fire, heat or smoke, they should leave, unless they believe that they cannot leave. It is at that point that the first of the four principles applies, namely, to explore with the caller whether there is a safe alternative escape route.
- Once the CRO has established that the caller cannot leave, or at least believes that they cannot leave, the call becomes an FSG call.⁵ Only when there is no safe alternative route of escape should the CRO turn to “assess”, “protect”, “reassess” and “rescue”.

PN790

29.18 PN790 was introduced in response to the Lakanal House fire and specifically in response to recommendation 7 in the LFB Lakanal Report.⁶ It deals with fire survival guidance, although not specifically in the context of calls from or in respect of high-rise buildings. It broadly follows the generic advice for fire and rescue authorities contained on page 8 of GRA 3.2.

29.19 The purpose of the policy is set out at paragraph 1.1 as follows:

“The purpose of this policy is to explain what a Fire Survival Guidance (FSG) call is and to describe how critical information should be exchanged between Brigade Control and the incident ground. It provides guidance on how this information is to be recorded for use by incident commanders (IC).”

29.20 The central message of PN790 is, therefore, of the need for clear lines of communication between the control room and the incident ground. What should be done to achieve that is expressed in clear and detailed terms in paragraphs 4.2, 5, 7 and 9. In particular, paragraph 9, entitled Communication with Control, provides:

“9.1 It is vital that control is kept informed of the actions being taken to resolve each FSG call. The fact that control is aware of the actions being carried out on the incident ground will greatly enhance the advice given to FSG callers.

9.2 Informative messages from the incident ground should also contain an update on progress relating to those specific FSG calls by both the flat/house number to avoid confusion.

9.3 The outcome of every FSG call must be communicated to control.”

29.21 In a similar vein, the following provisions of PN790 also deserve attention:

“4.1 Occasionally control receives multiple calls at an incident. All FSGs received by control are treated with the same level of urgency, however, in certain circumstances, the officer in charge of control may direct call handlers to terminate a call to answer another.

⁴ For example, Real witness statement [MET00007696] p. 3.

⁵ This took some teasing out in the evidence: Smith Day 22/5/21-13/22. The essence of FSG is that the caller is or believes they are trapped. For example, Norman witness statement [MET000080589] p. 2; Fox witness statement [MET00007764] p. 2; Adams witness statement [MET00007762] p. 4.

⁶ [HOM00001124] p. 55. Recommendation 7 was: “Operational policies should better reflect the need for two-way communication between Control and the incident ground when FSG calls are underway”.

4.2 The IC, based on their situational awareness and the information provided by control, will decide how to prioritise FSG calls and the actions to be taken on the incident ground. ICs should direct their resources to those callers at greatest risk (high priority) if practicable ...

...

5.1 As soon as control has confirmed that a FSG call is in progress they will contact the incident ground and start to pass over the initial details. At this stage it is likely to be basic information relating to the number of persons involved and their location within the property.

...

5.4 Control will contact the Initial Command Pump (ICP) and pass the information below by appliance radio for each separate FSG call. When passing this information, control will reference the information using the relevant flat/house number.

5.5 Control will attempt to gather all the information on the Control Information Form (see Appendix 2) and relay this information to the incident as and when it becomes available:

- Number of flat/house⁷
- Number of persons involved
- Location of caller within premises and access point
- Condition of their location i.e. heavy smoke, thick smoke
- Callers proximity to fire if known
- Latest FSG advice given by Control
- Time of FSG call
- Time updated

...

5.7 All FSG call information must be passed to the IC who will decide what action should be taken. The expectation is that all ICs will treat FSG calls as a priority and consider deploying and increasing resources accordingly.

...

7.10 All actions taken on the incident ground to resolve the situation should be relayed back to control whilst a FSG call is still in progress. This is so that control can pass information which may be beneficial to the caller, e.g. the crew are en route.”

29.22 Paragraph 8 of PN790 is entitled *Advice to Fire Survival Guidance callers*. It sets out, in clear terms, the four stages of “Escape, Assess, Protect and Rescue”. Paragraph 8.3 makes it clear that if there is no safe alternative escape route the operator should ask the caller direct questions (i.e. move to the assessment stage). This broadly mirrors the contents of PN539 set out above. Both PN790 and Appendix 3 of PN539 require the operator to reassess the caller’s situation, although this is not listed as one of the core principles.

29.23 Paragraph 8.7 of PN790 provides that:

“In exceptional circumstances an IC may consider informing control that their advice to FSG callers should be altered e.g. to attempt to leave their property. The IC should remember that this advice may be contrary to National Policy for control staff on FSGs and liaison with the officer in charge at control will be required for agreement to change the prescriptive advice.”

⁷ The list set out in PN790 does not exactly match the list in Appendix 3 to PN539. For example, the number of the flat or house is not a required data point in Appendix 3 of PN539 and Appendix 3 of PN539 does not require the CRO to obtain information about the “access point” or to relay information of the “time updated”.

RIF for Operators

29.24 The RIF for Operators (dated 3 April 2014)⁸ was a prompt sheet or script for CROs handling FSG calls. The pertinent provisions in it are as follows:

The heading of paragraph 1.3 is “*When it may be safer to stay put*”, beneath which it says:

“**Purpose built flat/maisonette** – not affected by heat or smoke

If a caller is inside a purpose built flat/maisonette that is not on fire or affected by heat or smoke, advise caller: It is **USUALLY SAFER** to stay inside flat/maisonette. But if they feel unsafe or they become affected by heat or smoke, then advise caller to **GET OUT AND STAY OUT**

All premise property types – if escape routes are blocked by fire

If escape routes are blocked by fire it maybe safer to stay put until the fire brigade arrives.”

29.25 The essential information which it instructs CROs to obtain from callers includes information about whether they are able-bodied, whether there are hazards or pets, and the layout of the property.

29.26 The reassurance to the caller is scripted as example statements:

“The firefighters are on their way

“The firefighters know where you are

“The firefighters are there

“The firefighters are dealing with the fire...”

RIF for Supervisors

29.27 The RIF for Supervisors was also dated 3 April 2014 and (unlike the RIF for Operators) was updated on 2 April 2016.⁹ The following are its most pertinent provisions:

“If caller is ringing from a property that is on fire or they or their property is being affected by heat/smoke/flames from a fire elsewhere ensure that the CRO identifies if they are able to **escape** by primary or other means (ideas to prompt caller are provided in the FSG Operator RIF).

The Incident Commander (IC) is informed that an FSG call is in progress and is provided with the information obtained so far, including the caller’s flat/house number (this will be the unique identifier) ...

...

Supervisor ... to ensure that:

An assessment of the situation is made by the CRO BEFORE they provide standard Fire Survival Guidance as detailed in FSG Operator RIF

...

Supervisor or nominated person to consider:

- Dedicating a supervisor to act as a sole contact point between Control and ICP/CU or officer nominated by IC to pass all relevant information
- Using M2FH or FLONOPS1 (if sufficient staff available) where a large number of FSG calls are being received as this will free up the main scheme radio

...

⁸ [LFB00003542].

⁹ [LFB00003541].

- Supervisor or nominated person to ensure that the IC is kept informed of critical information passed to and from each FSG caller, including where available:
 - Number of flat / house (unique identifier for each call)
 - Name of caller (not to be passed by Radio) Number of persons involved [sic]
 - Location of caller within premises
 - Conditions within premises e.g. heavy / black smoke
 - Proximity to fire
 - Latest advice given to caller
 - Time of FSG call¹⁰

The above information to be passed to the lead appliance at the incident. If unable to raise the lead appliance – Page the IC and call any other attending appliances and pass information to that resource.

A message acknowledging receipt must be sent from the incident.

Ensure that attending Command Units are kept informed of messages to and from the incident.”

3 The experience and training of CROs

Experience

- 29.28 Taken as a group, the CROs on duty on the night of the Grenfell Tower fire had decades of control room experience between them. That included handling calls from high-rise residential blocks, the make-up of pumps and other appliances at large incidents, resourcing and communications generally. As the statistics demonstrate, however, their experience of handling FSG calls was very limited. That was borne out by the evidence of the most experienced CROs themselves, who said that they had handled no more than a small number of FSG calls in the course of their long careers.
- 29.29 Even the most experienced members of the control room staff had no real understanding of how the control room would handle a large number of FSGs generated simultaneously by a single, or perhaps more than one, incident. CRO Adams recalled one occasion, some years before the fire at Grenfell Tower but after that at Lakanal House, when the control room took several calls from a high-rise residential building,¹¹ but beyond that, none could recall any previous experience of such a situation, other than in connection with the Lakanal House fire itself.

Training

- 29.30 All the CROs who gave evidence in person were asked about their training. It is right to point out that none of them were shown any training records or materials to refresh their memories and their evidence was therefore based entirely on their recollection and their individual impressions. It is understandable that they may not have remembered in any detail the occasions on which training was given in one form or another. Their evidence, therefore, is not necessarily a reliable basis for determining what training was in fact delivered, when, or what it contained and to that extent it must be approached with some caution. Nor have I yet had a chance to explore with those responsible for developing and delivering training what arrangements were made to ensure that control room officers generally, and supervisors in particular, understood what was expected of them. It would be inappropriate at this stage,

¹⁰ There is then a list of information points similar to (but not exactly the same as) that contained in PN539 and PN790.

¹¹ Adams Day 80/9/15-10/10. The fire was in the Fred Wigg Tower in Leytonstone, London E11 in December 2011.

therefore, to make any findings about those matters, but the evidence heard in Phase 1 explains why these are matters that will need to be investigated in Phase 2. For present purposes it is more important to understand what the CROs thought they were supposed to do in response to FSG calls and whether they were adequately prepared to deal with what happened in the control room on the night of the fire. An objective assessment of the training that was provided and the extent to which (if at all) they fell short of it is a matter for Phase 2.

29.31 CRO Sarah Russell described the nine-week training which she had started in September 2016. She completed her probationary period shortly before June 2017. Her training was therefore both recent and fresh in her memory and involved the following:¹²

- a. A day's training on FSG calls by reference to both PN539 and PN790, in the course of which working practices were explained and example calls were played. Trainees were instructed how to handle FSG calls, but there was no role-play.¹³
- b. No specific instruction on the lessons to be learnt from Lakanal House, beyond being told that it was a "hard example" (because calls ended with fatalities).
- c. "Brief" training on how to assist a caller in identifying a safe alternative escape route (such as by asking questions to find out if there is smoke or fire outside the door) but not specifically relating to a high-rise building.

29.32 As far as she could recall, however:

- a. She had not received any training on assessing a potential escape route or on how to exhaust the possibilities of escape before moving to reassure the caller.
- b. She had not been warned about the risk of lulling the caller into a false sense of security by moving too quickly to reassure them that rescue was on its way, thereby causing them not to examine with sufficient care the possibility of escape.
- c. She had received no training specifically relating to FSG calls from high-rise residential buildings.
- d. Nor had she received any training on how a control room should handle a large number of simultaneous FSG calls, or on how a CRO should act in that situation, or on how to prioritise calls.
- e. She could not recall having received any training on how to obtain or respond to information from the incident ground or how to read and use the information from the heli-tele downlink in the control room.
- f. She had received no training which enabled her to understand the significance of fire and smoke development.

29.33 The first FSG call of CRO Russell's career was with Jessica Urbano Ramirez. The call started at 01.29.48 and ended when CRO Russell terminated it at 02.24.45 after Jessica had become unresponsive. On any view this would have been a challenging call for even the most seasoned CRO, and the courage and calm professionalism with which CRO Russell handled it reflects great personal credit on her. When asked whether she would have liked to have had any additional training to prepare her for this call, she identified (i) more training in dealing

¹² Russell Day 76/3/14-6/11.

¹³ Russell Day 76/52/24-53/6.

with such calls following her initial training; (ii) training on high-rise FSGs and multiple FSGs; and (iii) a set procedure to follow in order to prioritise FSG calls when many came in at the same time.¹⁴

- 29.34 CRO Peter Duddy was also a comparatively recent recruit to the control room, having been trained in 2015. He said that his training on FSG calls had comprised one afternoon session, which included what advice to give and what questions to ask.¹⁵
- 29.35 FSG refresher training for CROs who had completed their initial training and were now “on the Watch” appears not to have been regular or even annual. Their individual recollections of when they received training tended to vary, although it is possible that the dates on which they received training did vary.
- 29.36 Concern also arises about the training of supervisors. OM Alexandra Norman recalled a significant FSG training session in 2011 or 2012, but nothing since. She had the same training as the CROs.¹⁶ The LFB Lakanal Report recorded (at page 53) that the LFB had “... introduced a supervisor’s course, focussing on leadership and general supervisory actions and role within the Control room including FSG”. It is not clear on the evidence at the moment whether OM Norman or other LFB officers of similar rank received such training and her evidence suggests that she did not. That is a matter which will have to be examined at Phase 2.
- 29.37 All the CROs who gave evidence in person were asked in general terms about the content of their training in relation to handling FSG calls and communication with the incident ground. Again, their accounts and recollections tended to vary in many respects and there was very little consensus about what their training had actually covered.
- 29.38 CRO Yvonne Adams and CRO Christine Howson recalled training sessions with the command units on handling multiple FSG calls which took place in January 2017.¹⁷ They recalled that the number of FSG calls assumed for the purposes of those exercises did not exceed “six at most” (CRO Adams)¹⁸ or “two or three” (CRO Howson).¹⁹ One CRO recalled being trained on just a single FSG call.²⁰ Some CROs had undergone FSG role-play training sessions in 2016, but those were for the benefit of command unit officers rather than CROs.²¹
- 29.39 The CROs’ evidence about their training can be summarised as follows:
- a. CROs had been trained, at least in general terms, on PN539 and in some (but not all) cases on PN790,²² but not necessarily on the RIFs provided for their use when handling calls.²³ They appeared to be familiar with the provisions of the policies when asked about them. Some CROs said that they had received training on PN790 in terms of what questions to ask trapped residents and how to extract the best information from them,²⁴ but some recalled no such training at all.²⁵

¹⁴ Russell Day 76/52/9-23.

¹⁵ Duddy Day 42/175/5-176/11.

¹⁶ Norman Day 42/13/2-16.

¹⁷ Adams Day 80/5/21-25; Howson Day 80/123/9-16.

¹⁸ Adams Day 80/6/11 (as part of the command unit training sessions for training command unit officers).

¹⁹ Howson Day 80/124/12-15; Gotts Day 43/114/21-23.

²⁰ Darby Day 33/115/19-23.

²¹ Howson Day 80/123/7-124/1; Adams Day 80/4/2-20.

²² For example, OM Norman was not trained on PN790: Norman Day 42/12/16-22.

²³ For example, Gotts Day 43/112/14-18.

²⁴ For example, Duddy Day 42/176/6-18.

²⁵ For example, Gotts Day 43/113/7-13.

- b. None of them recalled having received any training on how to advise occupants to evacuate a building in the event that the incident commander decided to alter the “stay put” advice and order a partial or full evacuation of the building.²⁶
- c. None of them had received training on what advice to give if the building had a single exit route, particularly where that was smoke-logged.²⁷
- d. No training had been given on how to judge whether a caller should be advised to evacuate or stay put.²⁸
- e. No specific training had been given on how CROs were to assess the safety of the exit routes or whether there were possible alternative exit routes for trapped residents.²⁹
- f. CROs had not been trained to understand that, when advising a caller who believes they are trapped, to move too quickly to the “reassurance” phase may unwittingly lull the caller into a false sense of security.³⁰
- g. None of their training appears to have been specifically directed to how a CRO should reassure callers without unfairly or falsely raising their expectations of rescue.³¹
- h. They do not appear to have received any training on how to handle numerous simultaneous FSG calls other than (in the case of CROs Adams and Howson) in the training sessions with the command units which had taken place in 2017.³² However, that training had been designed mainly to enable the command unit officers to understand their role and CROs Adams, Howson and AOM Peter May mainly participated in and facilitated the workshop.³³ In any event, that training did not cover more than, at most, six FSG calls at any one time.
- i. They had received no training in how to make use of information obtained elsewhere in the control room or from the incident ground.³⁴
- j. Some CROs had received training in the lessons learned from the Lakanal House fire,³⁵ although their recollection of the specific content of that training was limited to generalities about what questions to ask callers. Some CROs recalled no specific Lakanal-based training.³⁶ CRO Angie Gotts’s personal lesson from Lakanal House was that the assumption that crews would reach callers was not always reliable,³⁷ a lesson which, although contained in paragraph 293 of the LFB Lakanal Report itself, appears either not to have been taught in training or else had been forgotten by many CROs when advising callers from Grenfell Tower on the night of the fire.

²⁶ Given that paragraph 8.7 of PN790 anticipates that the incident commander could alter the FSG advice, it is reasonable to expect that CROs would be trained on how to give advice if that happened.

²⁷ Gotts Day 43/113/7-114/4; Adams Day 80/7-8.

²⁸ Norman Day 42/13/20-24.

²⁹ Duddy Day 42/176/12-18; Russell Day 76/40/5-10.

³⁰ Russell Day 76/40/11-19.

³¹ Howson Day 80/163/6.

³² Adams Day 80/5/21-25; Fox Day 80/183/1-4.

³³ Adams Day 80/6/1-7/12; Norman Day 42/7/2-10.

³⁴ Duddy Day 42/180/18-25; Gotts Day 43/121/22-122/4.

³⁵ For example, CRO Gotts in 2012: Day 43/112/7-9; Fox Day 80/182/8-10.

³⁶ Howson Day 80/124/16-20; Gotts Day 43/113/14-18.

³⁷ Gotts Day 43/117/1-13.

- k. Some, but not all,³⁸ CROs thought that they had probably received training in asking callers about whether they had mobility difficulties or whether there were children in the property, but not elderly people.³⁹
- l. They had received no training in how to communicate with callers whose first language is not English, although there had been training on how to set up a “Language Line” whereby an interpreter can be obtained.⁴⁰

The LFB’s awareness of the deficiencies

- 29.40 The absence of satisfactory procedures and training for handling large numbers of FSG calls appears to have been a cause of concern to some within the LFB following the Lakanal House fire. In 2014 SM Peter Johnson took the initiative to remedy what he saw as a deficiency by producing a Tactical Decision Exercise training programme⁴¹ involving seven FSG calls (the number that could be accommodated on the FSG sheet in the command units under Appendix 1 of PN820). The purpose of the programme was to ascertain the maximum number of FSG calls the control room and incident ground could handle satisfactorily at any one time and to clarify the roles of the operational officers at an incident in handling FSG information coming from the control room. He also wished to demonstrate that the current FSG procedures could not adequately cope with a high-rise incident which gave rise to numerous calls and many casualties.⁴²
- 29.41 SM Johnson’s training programme was never implemented, but the real significance of his evidence lies in his realisation that even seven simultaneous FSG calls is a very large number. As he said, his aim had been to show that the existing policies needed to be changed, so that if the number of FSG calls did exceed three or four, the LFB could deal with them properly.⁴³ SM Johnson sat on the LFB’s FSG policy group in 2014 and discussed this programme with senior officers at the time.
- 29.42 At Phase 2 it will therefore be necessary to examine whether, when and to what extent there was, within the LFB, an awareness of deficiencies in the FSG policy and training of the kind identified by SM Johnson and, to the extent that there was, what the LFB did or proposed to do about it. It will also be necessary to inquire why the LFB itself or Babcock International Group, as its training provider, decided not to proceed with SM Johnson’s programme or something similar to it. For present purposes it is enough to say that SM Johnson’s views on the subject proved to be remarkably prescient.
- 29.43 The evolution of CRO training between 1993 and 2009 (the date of the Lakanal House fire) is summarised at Section E of the LFB Lakanal Report and may also require closer examination at Phase 2. The point for present purposes is that the warning identified in the passage of the Fire Service Circular 10/93 emphasised above was, by reference, an applicable principle in the version of PN539 current at the time of the Grenfell Tower fire, as paragraph 5.19 of PN539 referred CROs to the Fire Service Circular 10/93 for detailed information, advice and guidance. However, according to SOM Joanne Smith’s evidence,⁴⁴ the practice of calming the caller that Fire Service Circular 10/93 deprecated was removed from the policy in 2011 and

³⁸ For example, CRO Duddy: Duddy Day 42/177/6-11.

³⁹ Darby Day 33/140/15-141/13.

⁴⁰ Darby Day 33/118/2-119/9; Duddy Day 42/176/19-177/5; Norman Day 42/59/9-60/14; PN539 paragraphs 4.7-4.8.

⁴¹ Johnson witness statement [MET00013235] pp. 2-3, 5 and PMJ/7: [MET00016997]; [MET00016998]; [MET00016999]; [MET00017000]; [MET00017001]; [MET00017002]; [MET00017003]; [MET00017004]; [MET00017005]; [MET00017006]; [MET00017007]; [MET00017008].

⁴² Johnson Day 36/219/17-21; 224/2-10.

⁴³ Johnson Day 36/233/22-234/11.

⁴⁴ Smith Day 22/18/2-20/19.

replaced with a process of more assertive reassessment of worsening conditions, which she said was now reflected in current LFB training. It is possible that this change in policy was prompted by the conclusion at paragraph 293 of the LFB Lakanal Report to which I have referred. That is another matter for investigation in Phase 2.

4 Deficiencies in the LFB policies

29.44 Having considered the LFB policy documents relating to the management of emergency calls, in the light of events on the night of the fire, I have reached the conclusion that they are deficient in a number of respects in relation to FSG calls.

Policy No. 539

29.45 PN539 is deficient in the following respects:

- a. It defines an FSG call by reference to a combination of the caller's belief that they are trapped and the response of the operator in remaining on the line, but that involves defining the nature of the call by reference to the response it receives. In my view that makes no sense. Almost by definition, anyone who calls the fire and rescue service in the belief that they are trapped in a burning building is seeking fire survival guidance, whatever the nature of the response, but the policy tells CROs how to respond to such calls, and remaining on the line until the caller is able to leave without assistance or is rescued or the line is cleared is in reality part of that response.
- b. The terms of the definition, however, point to an underlying reality, namely, that an FSG call is one which requires the continued telephone presence of a CRO. It follows that, if the policy is to be fully complied with, the number of simultaneous calls from people who believe they are trapped cannot exceed the number of CROs available to handle them. This important factor is not reflected anywhere in the LFB policy documents, but it suggests that, if the number of calls waiting to be answered exceeds the number of CROs on duty, the operations manager should inform the incident commander immediately, who can then decide what steps should be taken in the light of the way in which the fire is developing. That might include a partial or full evacuation.
- c. It requires CROs to advise callers to leave if "the situation changes" and the caller is "affected" by fire, heat, or smoke, but it gives no guidance on what "affected" means for these purposes. As a result, too much is left to the individual CRO's interpretation of the policy. In particular, it is unclear whether, before the caller is advised to evacuate, they should be affected by fire, heat or smoke originating in their own flat or whether it is enough that they are affected by smoke emanating from elsewhere in the building. The evidence suggests that the majority of CROs thought it was the former. CRO Howson went as far as to say that she thought that it referred only to a fire in the caller's flat, and that, if a caller from a high-rise building said that they had smoke coming into their flat, she would advise them not to leave but to stop the smoke coming in.⁴⁵
- d. It contains no clear statement that the CRO must thoroughly explore the basis of the caller's belief that they cannot escape *before* moving to the "assess", "protect" and "reassess" phases. Given that a call is an FSG call if the caller believes that they cannot leave their flat, it is essential that the CRO taking the call does all they reasonably can to assess the safety of possible routes of escape in conjunction with the caller. CROs need

⁴⁵ Howson Day 80/127/8-129/24, and her witness statement [MET00007763] pp. 5, 7.

to satisfy themselves that callers are really unable to leave the premises, rather than simply taking their assertions at face value.

- e. It refers to the four principles of “escape, assess, protect and rescue”, but the implementation of those principles requires continual reassessment of the caller’s situation: see paragraph 295 of the LFB Lakanal Report. The RIFs emphasise the importance of regular reassessment⁴⁶ during the call as a separate phase after the CRO has started to protect the caller.
- f. PN539 does not warn that an assumption that the fire and rescue service is on its way to rescue the caller is not always well-founded. That danger, which was identified in paragraph 293 of the LFB Lakanal Report, does not appear to have found its way into PN539, with the consequence that CROs often provided reassurance to callers that was not founded on any information from the incident ground.
- g. It contains nothing to assist CROs and senior managers in handling a large number of FSG calls concurrently.
- h. Contrary to the guidance given at page 18 of GRA 3.2, the policy does not require CROs to find out whether the caller is, or has with them, a person who is disabled, has poor mobility or has an illness that would impede their ability to leave or who for some other reason would require assistance in the event of an evacuation.
- i. It does not provide guidance on how to communicate with persons whose first language is not English. Although paragraph 4.8 of PN539 states that agreements are in place for the use of an interpreter service (the “Language Line”), the evidence was that this was a “quite long winded” process, and too slow for the purposes of an FSG call.⁴⁷ Although CROs in London have wide experience of speaking to callers whose first language is not English,⁴⁸ that is not a sufficient substitute for clear guidance supported by effective training.

29.46 These deficiencies in PN539 support the conclusion that it did not articulate the “stay put” advice well and did not make clear to CROs certain crucial requirements that had to be met in order to maximise the chances of escape from a high-rise building. The reasons why PN539 was unsatisfactory in these respects will have to be explored in Phase 2.

Policy No. 790

29.47 PN790 is deficient in the following respects:

- a. Although it contemplates the possibility of several concurrent FSG calls, it gives no guidance on what action the control room should take to deal with further calls when the number of FSG calls currently in progress are occupying all the CROs on duty.
- b. In particular, it contains no specific reference to the need to inform the incident commander when the number of FSG calls from a single incident is approaching, or has reached, the number of CROs available to handle them to enable the incident commander to take appropriate action.
- c. PN790 does not give guidance to control room supervisors on what to do when a large number of FSG calls are received in order to ensure that they have enough resources

⁴⁶ [LFB00003542] p. 3; [LFB00003541] p. 3.

⁴⁷ Smith Day 21/130/19-131/3.

⁴⁸ Smith Day 21/131/1-3.

available. The RIF for Fire Survival Guidance (Supervisor) provides that when many FSG calls are received the supervisor should consider “placing all non-event radio traffic onto one channel” and “varying paging operator to any available staff”.⁴⁹ It was thus envisaged that supervisors would need to take further action, although the measures suggested in the RIF do not address the question of how the limited resources within the control room could be expanded to absorb the extra demand. OM Norman suggested a recall system for control staff in large-scale incidents.⁵⁰

- d. Like PN539, PN790 fails to provide for any arrangements for assessing whether a caller may be unable to leave the building due to disability, poor mobility, illness or the effects of the fire, as required by GRA 3.2.
- e. PN790 does not set out how FSG information should be recorded in the control room even though that is required by GRA 3.2 and by paragraph 7.50 of PN633.

29.48 For present purposes it is enough to note that PN790 was, subject to these flaws and within the assumptions on which it was based, for the most part a clear framework for the handling of FSG calls both in the control room and on the incident ground. It represents a reliable standard against which to undertake an assessment of what the control room and the officers at the incident ground did on the night of the fire by way of collecting, handling and communicating FSG information.

RIF Fire Survival Guidance (Operator)

29.49 The RIF for use by CROs is unsatisfactory in a number of respects:

- a. It contains no clear guidance on what “affected” by heat, smoke or fire means or how it is to be assessed.
- b. It contains no clear guidance on how to go about assessing the safety of routes of escape if the caller is, or says that they are, affected by heat, smoke or fire, or “feel unsafe”.
- c. It contains no warning that assurances that firefighters will rescue callers should be based on information from the incident ground rather than on their own expectations or assumptions.
- d. It contains no guidance about what information the CRO should gather in order to assist the control room supervisor or incident commander to decide whether a partial or total evacuation of the building should be carried out.
- e. It contains no guidance about what advice the CRO should give a caller once a decision has been made to carry out a full or partial evacuation of the building.

RIF Fire Survival Guidance (Supervisor)

29.50 The RIF for Supervisors suffers from similar defects. Like the RIF for Operators, it provides no guidance on how supervisors should gather information from CROs to enable them to form an overall assessment of the situation in order to assist the incident commander to decide whether the “stay put” advice should be revoked.

⁴⁹ RIF Supervisor p. 2.

⁵⁰ Norman contemporaneous notes [MET00005199] p. 5.

- 29.51 However, the RIF for Supervisors does repeatedly make it clear that even in the case of “a large number of FSG calls” it is essential that the fullest information possible be passed from the control room to the incident ground and vice versa. As in the case of the word “multiple” in paragraph 4.1 of PN790, the expression “a large number” is not defined, but (as in the case of PN790) it is unlikely to have contemplated more than about seven at any one time.
- 29.52 The reasons for the deficiencies in the RIFs will be explored at Phase 2.

5 Deficiencies in handling FSG calls

- 29.53 In the light of the deficiencies in policies and training identified above, it is perhaps no surprise to find that in many respects the CROs’ handling of FSG calls was unsatisfactory. Their actions, as evidenced by their own accounts, the transcripts of the 999 calls and the contents of the SIL, showed that:
- They were not sufficiently familiar with what the relevant LFB policies required them to do and the order in which to do it.
 - There was no consistent understanding among them of some of the basic concepts underlying the advice to be given to a caller, or the information to be gathered and at what stage.
 - As a body, they frequently failed to apply the policy requirements consistently.
- 29.54 These failings can be grouped around five distinct features of the advice that CROs gave to emergency callers from within the building. In general:
- When callers said that they could hear, smell, feel or see (i.e. were affected by) fire, heat or smoke, CROs did not try to find out to what extent they were directly affected; often they did not advise them to leave their premises but instead told them to stay where they were.
 - CROs did not carry out a proper assessment of the safety of the escape route but advised the caller to stay put or moved immediately to the “protect” phase. All calls of that kind were treated as FSG calls, even though the caller may not in fact have been trapped.
 - CROs invariably told callers that firefighters were on their way without having any sound basis for doing so. As a result, some callers were lulled into a false sense of security, remained in their flats and did not attempt to leave with sufficient vigour, or at all, despite the fact that escape was possible.
 - CROs did not take in what callers were telling them about the location of fire and smoke; instead they too often treated what callers were telling them with scepticism, in some cases contradicting the caller.
 - CROs did not take adequate details of flat numbers, the number of people present or whether people were disabled or had health or other conditions that might impede escape, and they often did not take sufficient information about conditions in the flat.
- 29.55 The unprecedented volume of calls from people trapped inside the building placed enormous pressure on the control room, but in many cases that does not provide an excuse for these shortcomings, all of which involved significant departures from established policy in one way or another. The evidence which leads to these conclusions is summarised below.

Failure to ascertain the extent to which callers were affected by fire, heat or smoke

- 29.56 In early calls to the control room callers told CROs that they could smell or see smoke in their flats, but not that they were trapped. CROs advised callers to stay put without exploring and assessing the conditions, contrary to the advice set out in Appendix 3 of PN539 and the RIF for Operators.
- 29.57 In some instances that was a result of the CRO's failure to understand the policy. One example was CRO Howson, who would advise a caller that if smoke was coming into their flat, either through the door or the window, she would not consider that the caller was "affected" by it within the meaning of PN539 and would therefore not start to explore with the caller whether it was safe to leave. Instead, she would advise them to stop the smoke coming in and await rescue. The critical question, in her view, was whether the flat was on fire; only at that point would she begin to explore the possibility of escape.⁵¹ She explained that that was because she assumed that in a high-rise building a caller is safe if they are not directly affected by fire, even if there is smoke coming in.⁵² On that kind of call she would not usually take any further details. The calls at 01.32.10 from Biruk Haftom on the top floor and at 02.00.33 from Anthony Disson in Flat 194 on floor 22⁵³ provide two examples of CRO Howson's assumption that, because the flat was not affected by fire (as she understood it), there was no need to explore whether the caller could leave the building safely. In both calls, the callers had reported that they were affected by smoke. Her understanding of the policy in this narrow way was not supported by SOM Smith⁵⁴ and was a serious error.
- 29.58 CRO Adams, on the other hand, did think that a caller was "affected" by fire if they could see fire coming.⁵⁵ CRO Fox thought that a caller who had smoke in their flat was "affected" by smoke.⁵⁶ However, in practice, the CROs did not always apply their understanding of the policies to the calls they took.
- During a call made at 01.26.58 from Flat 95 on floor 12,⁵⁷ Katarzyna Dabrowska told CRO Fox that her neighbour's kitchen was on fire and that smoke was coming into her own flat through the floor from the main door. Katarzyna Dabrowska did not tell CRO Fox that she was trapped. CRO Fox did not advise her to leave now that smoke was entering her property.
 - Similarly, Anthony Disson⁵⁸ calling at 01.30.08 from Flat 194 on floor 22 said to the control room that "you could not see a hand in front of ya", and yet CRO Fox did not tell him to leave the flat or explore whether he could safely do so. She explained her failure to do so by the number of calls needing to be answered.
 - At 01.30.38 CRO Gotts took a call from Naomi Li in Flat 195 on floor 22,⁵⁹ in which she was told that there was smoke in the flat and that the fire was in next door's kitchen. She did not tell CRO Gotts that they were trapped. Naomi Li asked CRO Gotts "Do we stay in the flat" to which CRO Gotts replied "Well, I obviously can't advise you but I'll let the

⁵¹ Howson Day 80/127/8-129/17, 80/139/23-140/4.

⁵² Howson Day 80/137/8-138/16.

⁵³ Howson Day 80/152/9-23.

⁵⁴ SOM Smith said that being affected by fire, heat or smoke meant that the caller should be advised to leave and assisted in assessing the safety of the exit route: Day 22/5/9-20.

Adams Day 80/16/4-17.

⁵⁶ Fox Day 80/189/1-10, 80/191/4-19, 80/227/1-6.

⁵⁷ [LFB00000309].

⁵⁸ [LFB00000459].

⁵⁹ [INQ00000472]; [LFB00000311].

firemen know you're there, ok?" That response did not comply with PN539 and the RIF for Operators, which required her to advise them to leave the flat unless they thought they were trapped, and then to explore with her whether there was a safe means of escape, and, if not, to give FSG advice. She declined to give any advice. She explained that omission by reference to her not having had a clear picture of the conditions in the exit route,⁶⁰ but that was because she did not engage Naomi Li in making an assessment together. She could not explain why she had not pressed Naomi Li to assist her in that exercise.⁶¹ SOM Smith accepted that the approach taken on this call represented a departure from normal practice.⁶²

- d. Even OM Norman departed from policy in her advice to Farah Hamdan in Flat 175 on floor 20 who called at 01.30.02.⁶³ Farah Hamdan told her that the fire was in her neighbour's flat but that there was smoke coming into her own flat. She did not tell OM Norman she was trapped, but she did ask her what she should do. OM Norman advised her to stay in the flat unless it was safe to leave. She did not tell her that, because her property was now affected by smoke, that she should leave, nor did she assess with Farah Hamdan whether it was safe to leave.

Inadequate assessment of escape routes

29.59 CROs did not adhere to the requirements of PN539 or the RIF for Operators in properly moving through each of the three stages explained above.⁶⁴ Once callers reported that they were affected by fire, heat or smoke and that they believed that they were trapped, CROs failed to assess the safety of escape routes with them. Some CROs said when giving evidence that they knew that the policy required them to assess conditions and whether there was a safe exit route, for example, by asking callers about the situation, alternative exit routes and the severity of the smoke,⁶⁵ but in practice they took callers' statements that they were trapped at face value and too often jumped to the conclusion that no escape route existed. It was clear from the evidence that the reason they failed to adhere to the policy was due to the sheer number of calls that needed answering coupled with an assumption that crews would reach the occupants. In the absence of information from the incident ground that crews were having difficulties or that people were able to escape from the tower despite the conditions, the CROs were left to make assumptions based on their experience of previous fires and the belief that compartmentation would hold. The following are some examples from the evidence which show how widespread the problem was:

- a. During a call at 01.30.00 with Mariem Elgwahry⁶⁶ on floor 23, CRO Duddy was told that there was smoke entering the flat and that there was fire in her own flat on the floor below, but he did not ask her whether there was any safe exit route.⁶⁷

⁶⁰ SOM Smith similarly attempted to defend CRO Gotts's approach by reference to CRO Gotts not knowing the conditions in the escape route (Day 22/14/14-16/22) and by reference to the volume of calls (Day 22/16/25-17/12).

⁶¹ Gotts Day 43/172/8-173/2.

⁶² Smith Day 22/16/13-17/12.

⁶³ [LFB00000314].

⁶⁴ Namely, stage 1 (the caller is safe to remain in their flat); stage 2 (the caller is affected by fire, heat or smoke and may need to evacuate), and then stage 3 (the caller is trapped in their flat).

⁶⁵ For example, CRO Fox Day 80/189/1-10, 191/4-19, 227/1-6; CRO Howson Day 80/130/9-25; CRO Russell Day 76/10/15-15/18.

⁶⁶ [LFB00000310].

⁶⁷ Duddy Day 42/209/15-20.

- b. CRO Gotts took another call at 01.43.19 from Natasha Elcock during which she reported that there was now smoke entering her flat.⁶⁸ She accepted that she had not explored alternative escape routes with her.⁶⁹
- c. CRO Gotts took a call at 01.47.49 from Meron Woldelessie Araya and Lina Hamide⁷⁰ in Flat 74 on floor 10; again, she failed to explore alternative routes of escape. She put her omission down to the number of calls waiting and to accepting the caller's own assessment that they were trapped rather than testing it with them.⁷¹
- d. In a call made at 02.13.03,⁷² Nicholas Burton in Flat 165 on floor 19 told CRO Adams that he was trapped. She accepted what he said without exploring precisely why he thought he was trapped. She explained that she had assumed that he was trapped because he had said so and did not explore that in detail with him because there were more calls waiting. He said that he was safe and she expected the crews to get to him.⁷³
- e. During a call at 02.32.41 from Natasha Elcock⁷⁴ CRO Russell simply asked her whether she thought it was safer for her to stay or to try to leave.⁷⁵ She failed to ask for an assessment of the safety of escape routes. CRO Russell explained that CROs rely heavily on what the caller can see and leave the decision to them. She also blamed her failure to assess the prospects of escape on the volume of calls being received.⁷⁶

29.60 The failure of CROs to assess the prospects for escape in accordance with the policies had two potential consequences in the period before the “stay put” advice was changed. First, occupants may have stayed in their flats when they could have escaped to safety, even though the conditions in the lobbies and stairs were increasingly hostile after around 01.40 and certainly much more difficult after 02.00. Secondly, the incident ground was told that all 999 calls from the tower were FSG calls and that occupants therefore needed rescuing, whereas some could in fact have escaped without assistance. That could have led incident commanders to adhere to the strategy of responding to FSG information relating to individual callers for longer than might otherwise have been the case.

Assurances to callers that the firefighters would rescue them

29.61 A widespread feature of the exchanges between callers from the tower and the control room is that callers were routinely told that firefighters were on their way to rescue them, or knew where they were, or would be told where they were, or some other variant of that advice. However, all that was said without any reliable information from the incident ground to back it up. As SOM Smith accepted, there was an expectation that crews had been and would continue to be committed and that people would be rescued, but the control room did not know what was happening on the incident ground, where the firefighters were, or which floors they could reach.⁷⁷ The following are some examples of the advice given throughout the night:

⁶⁸ [LFB00000323].

⁶⁹ Gotts Day 43/177/23-178/1.

⁷⁰ [LFB00000330].

⁷¹ Gotts Day 43/180/8-181/10.

⁷² [LFB00000344].

⁷³ Adams Day 80/90/10-91/11.

⁷⁴ [LFB00000360].

⁷⁵ Russell Day 76/57/23-58/18.

⁷⁶ Russell Day 76/58/6-18.

⁷⁷ Smith Day 22/97/19-98/6, and the control room Debrief Report [LFB00003113] p. 4.

CRO Duddy:

- a. At 01.34.50, CRO Duddy took a call from Hashim Kedir in Flat 192 on floor 22, in the course of which he advised him to stay put, telling him that the fire brigade had “people coming to you now”.⁷⁸
- b. At 01.44.43, CRO Duddy spoke to Roy Smith in Flat 95 on floor 12 and told him that “we’ve got a lot of people to get out and we’re coming up ... we’re clearing everybody out as we go”.⁷⁹
- c. At 01.50.00, CRO Duddy spoke to Anthony Disson in Flat 194 on floor 22 and told him that: “we’re gonna come up, we’ve got firefighters coming to the 22nd floor already”.⁸⁰

CRO Howson:

- a. At 01.32.10 CRO Howson told Biruk Haftom (who had by then moved from Flat 155 to the top floor): “I’ll get the fire brigade to come along and check that everything’s OK once they’ve put the fire out”.⁸¹
- b. At 02.18.06 she took a call from Hashim Kedir, in the course of which she advised him that: “they’re making their way now ... it’s slow progress, I’m afraid, but they will get to you as soon as they can”.⁸²
- c. At 02.25.38 she took a call from Mariem Elgwahry, in which she asked: “Can you get us a chopper or something, could you get a helicopter or something to get us out?”, to which CRO Howson responded: “There is, there is one there, OK, all right, the fire brigade are on their way now, they’re making their way”.⁸³

CRO Gotts:

- a. At 02.15.07 CRO Gotts took a call from the elder son of Karen Aboud, in the course of which he asked CRO Gotts: “Are the fireman going to come?”, to which she replied: “Yes, they, the firemen are there. They know you are there. They’re going to come and find you, OK. There’s just lots of floors, isn’t there?” The caller then asked: “Is all going well?”, to which she replied: “Yeah, they’re putting the fire out. They’re trying to put the fire out, OK?” Towards the end of the call, having been asked again whether the firemen will come, she said: “Yes, the firemen will come, okay? And they’re on the 12th – they’re - - they know you’re on the 12th floor”.⁸⁴
- b. At 02.42.14 she took a call from Paulos Tekle in Flat 153 on floor 18, who said that nobody was evacuating them and requested assistance for evacuation. CRO Gotts assured him that she would pass the message on to the firefighters and that “they can come up and

⁷⁸ [LFB00000315].

⁷⁹ [LFB00000324].

⁸⁰ [LFB00000328].

⁸¹ [LFB00000667].

⁸² [LFB00000351].

⁸³ [LFB00000670]. This advice was early in the call, before CRO Howson learned that the fire was in Flat 205 and advised the occupants to leave (p. 7). For further instances of requests for helicopters by trapped occupants, Bassem Choukair asked for a helicopter at 02.43.55 [LFB00000376] and again at 03.02.06 [LFB00000396]; Nadia Choukair asked for a helicopter at 02.37.00 [LFB00000366]; Nura Jemal asked for a helicopter at 02.31.23 [INQ00000276]; Hashim Kedir asked for one (with Nura Jemal) on a call at 03.08.56 [LFB00000406]; the daughter of Hesham Rahman asked if a helicopter would be used at 02.36.12 [LFB00000364]; Paulos Tekle requested a helicopter at 02.42.14 [LFB00000371]; Lydia Liao requested a helicopter to be sent at 02.55.59 [LFB00000389].

⁸⁴ [LFB00000346].

find you". By that point the "stay put" advice had been revoked and CROs had been told that they should advise people to leave the building (see below).⁸⁵

CRO Russell:

At 01.29.48 CRO Russell took a call from Jessica Urbano Ramirez (who by then had moved to Flat 201 on floor 23), in the course of which she told Jessica that the crews were coming for her and were fighting the fire and making their way up.⁸⁶ CRO Russell accepted that she had had no hard information on which to base those statements but said that they reflected what she had expected to happen and that she was trying to give reassurance.⁸⁷

- 29.62 The CROs were well aware that no information about the response to FSG information, and in particular whether crews had been deployed in response to particular FSG calls, was being passed to the control room from the incident ground. The assurances they gave were based solely on what they expected or assumed to be happening or, in some cases, were given simply to calm worried callers. As the CROs who were asked about those calls accepted, their assurances were in fact likely to be misleading, because they were not based on any information coming from the incident ground.
- 29.63 After the "stay put" advice had been changed, SOM Smith and OM Norman told the CROs that callers had a "last chance" to leave the building and should do so without waiting for assistance. That message implied, or was at least intended to imply, that no one would be coming to rescue them. CROs were advised to use blunt language to get the message across to the callers. However, CROs did not always follow that advice and some continued to reassure callers that firefighters were coming to rescue them. For example:
- a. At 02.55.38, after the "stay put" advice had been withdrawn, CRO Gotts took a call from Marcio Gomes in Flat 183 on floor 21 who told her that he and his family could not leave; she advised him that she would "let the firemen know, OK, to come up to you".⁸⁸
 - b. At 03.08.56 (again, after the "stay put" advice had been withdrawn) CRO Gotts took a call from Flat 193 on floor 22. The callers asked her whether they could escape through the window to a helicopter that they could see. CRO Gotts told them that "We're coming up to you inside" and that "big ladders" were coming. Both callers could see a helicopter and asked for one to be sent to rescue them, to which CRO Gotts answered: "Okay, I'll let them know" and "Okay. All right, well I'll pass that over".⁸⁹ CRO Gotts was unable to explain why she had told the callers that big ladders were coming.⁹⁰ She also accepted that she had not intended to leave the callers with the impression that they could be rescued by helicopter. She had assumed that helicopter rescues were not possible because the rotor would fan the flames. She said that the reason that she had not advised the callers in clear terms that they would not be rescued by helicopter was to avoid causing them additional panic.⁹¹

⁸⁵ [LFB00000371] p. 8.

⁸⁶ [LFB00055504].

⁸⁷ Russell Day 76/33/1-4, 38/7-20.

⁸⁸ [LFB00000392] p. 3.

⁸⁹ [LFB00000406].

⁹⁰ Gotts Day 43/213/13-214/6.

⁹¹ Gotts Day 43/216/2-15.

29.64 Some of the occupants who gave evidence told the Inquiry that these assurances had created an expectation of rescue and had thereby deterred them from taking active steps to escape at an earlier stage. They therefore increased the risk that callers would die in their flats waiting for help that would never come or, if it came, would come too late. Examples of such evidence include the following:

a. Andreia Perestrelo said:

“We only stayed in the flat as long as we did because Marcio had spoken to 999 and he told me that help was coming.”⁹²

b. Marcio Gomes said in his written statement to the Inquiry:

“I wish the operators had been honest and more knowledgeable about the situation from the first phone call as, had I known that no help was coming, I would have handled the situation differently. I believe that there was a miscommunication between the call centre and the command centre on the ground and this is why we were still being told that help was coming. I appreciate that the operators started to change their advice on my third 999 call, but the operator still said she would let the crews know and would make us a priority. At no point did she say no help was coming and we had no choice but to try and get out ourselves. If I knew that no help was coming I would not have stayed in the burning tower with my family a minute longer.”⁹³

He told the Inquiry in his oral evidence that if he had known that the firefighters could not make it to their floor, he would have changed his approach.⁹⁴

a. Roy Smith spoke to the LFB control room four times during the night. He said in his oral evidence that the advice from the CROs that firefighters were coming had influenced his actions.⁹⁵

b. Karen Aboud, after a failed attempt to evacuate, was told by CRO Gotts during the call she made at 02.06.55 that she should stay put and that the firefighters would come up to her.⁹⁶ In her statement to the Inquiry, Karen Aboud said:

“So at this stage I was thinking I should stay because of waiting for the firemen who I’d been told were coming. I didn’t want my kids to get hurt – I thought it was just too risky to try and go without the firemen.”⁹⁷

c. Karen Aboud eventually escaped with her two sons after being told by CRO Duddy, in a call made at 03.08.01, that it was their only chance of survival.⁹⁸

d. Meron Woldeselassie Araya and Lina Hamide called 999 at 01.47.49. CRO Gotts told them that she could not advise them to leave and that she would let the firefighters know that they were there.⁹⁹ According to Lina Hamide’s evidence, they refused to follow advice from friends outside the tower telling them to get out because they had been advised to stay and thought that the LFB would rescue them. They eventually left the building after Lina Hamide, who was speaking on the telephone to her friend Musie, overheard a policeman tell Musie that they could not guarantee that the firefighters would reach them and they had to get themselves out.¹⁰⁰

⁹² [IWS00000349] paragraph 62.

⁹³ [IWS00001078] paragraph 134.

⁹⁴ Gomes Day 71(Fri)/88/2-7.

⁹⁵ Smith Day 64/81/23-82/11.

⁹⁶ [INQ00000371] p. 3.

⁹⁷ [IWS00000130] paragraph 28.

⁹⁸ [LFB00000402].

⁹⁹ [LFB00000330].

¹⁰⁰ [IWS00001175] paragraphs 17, 18, 27.

- 29.65 On the night of the fire the CROs received no concrete information from the incident ground beyond that which was contained in the formal and relatively anodyne “informative messages”. Their advice to callers that firefighters were on their way was based purely on their personal expectations and assumptions.¹⁰¹ That was very dangerous, because the whole concept of fire survival guidance rests on a well-founded expectation that the caller will ultimately be rescued. The purpose of PN790 is to ensure an exchange of information between the control room and the incident ground so that appropriate advice can be given.¹⁰² Without it, there can be no reliable grounds for such an expectation and the caller must be told to leave at all costs. However, it is not possible to say with any confidence whether unsupported assurances of that kind caused or contributed to any particular fatality.
- 29.66 Given the stark warning in paragraph 293 of the LFB Lakanal Report about the dangers of assuming that firefighters are on their way to rescue the caller, it is clear that that lesson had not been learned by the LFB, which repeated the mistake many times over in response to the fire at Grenfell Tower.

Dismissing information from callers about the location of the fire

- 29.67 A striking feature of many of the 999 calls in the early stages of the fire was that in many cases CROs insisted that the fire was on floor 4 of the building, contrary to what they were being told by the caller. They appear to have been unable to grasp the fact that it had spread rapidly up the building so that by 01.30 it was affecting (and indeed had entered) flats on the uppermost floors. Instead, CROs treated what callers were saying about the location of the fire with scepticism and in some cases actually contradicted them.
- 29.68 Furthermore, the CROs did not take in what they were being told by callers from outside the building so as to build up a broader picture of what was happening. There was no organised means of sharing with other CROs information obtained from callers, with the result that the CROs had no overall picture of the speed or pattern of fire spread. For too long they continued to think that the fire was still contained on the lower floors of the building. CROs consistently described being unable to understand what was happening on the incident ground. That was partly because they were getting no information from the command units at the incident ground.
- 29.69 These shortcomings emerge clearly from the evidence relating to the calls received in the 40 minutes or so after they started coming in to the control room at 01.21.¹⁰³ The following are particular examples:
- At 01.30.38 CRO Gotts received a further call from Naomi Li, who told her that there was smoke on floor 22. CRO Gotts said that the fire was on floor 4.¹⁰⁴ Naomi Li told her that her neighbour had said that the fire was actually in her kitchen. CRO Gotts registered that fact, but immediately said that “You’ve just got some smoke up there”. She told the Inquiry that she may not have understood what Naomi Li was saying and thought that some smoke had just travelled up to that part of the building.¹⁰⁵ She did not know that at the same time CRO Duddy had been speaking to the neighbour in Flat 196, Mariem Elgawahry, who had told him that her flat was on fire.¹⁰⁶

¹⁰¹ For example, Adams Day 80/91/15-19.

¹⁰² Lakanal Control Report Recommendation 7 and Action 7 p. 55; PN790 p. 2.

¹⁰³ The first 999 call from the building was at 01.21.24 from Naomi Li (Flat 195, floor 22) [LFB00000303].

¹⁰⁴ [LFB00000311].

¹⁰⁵ Gotts Day 43/169/19-171/10.

¹⁰⁶ [LFB00000310].

- b. At 01.30.00 CRO Duddy took a call from Mariem Elgwahry from Flat 196 on floor 22, who told him that the fire was in her flat and that she and others were now on floor 23.¹⁰⁷ CRO Duddy corrected her, saying:

“Okay, the fire’s on the 5th [sic] floor so you’re well away from the fire, OK?”

She responded:

“No it’s not. It’s in our flat, we ran out of our flat. It’s in our kitchen.”

He still questioned whether it really was fire or whether it was smoke. When giving evidence he explained that he had corrected her because in his experience people on upper floors of high-rise buildings often think there is fire when in fact there is only smoke and because at that point he still believed that the fire was on floor 4.¹⁰⁸ That was despite having taken a call at 01.26.54 from Helen Gebremeskel, in which he had been told that Flat 186 on floor 21 was on fire and that the whole building was on fire,¹⁰⁹ and despite having also taken a call at 01.28.26 from Natasha Elcock in Flat 82 on floor 11,¹¹⁰ who had told him that she was stuck because of smoke in the lobby. His explanation was that he had been relying on information that they had received from the incident ground and there had been no confirmation of the extent of fire spread.¹¹¹

- c. At 01.34.50 CRO Duddy took a call from Hashim Kedir in Flat 192 on floor 22, in which he told him that he and his family were trapped because the stairs were full of smoke.¹¹² CRO Duddy replied that the fire was on floor 5 and that the smoke could be coming up from there. He was unable to explain why he had told him that the fire was on floor 5 (or floor 4) when only four minutes earlier he had been told by Mariem Elgwahry¹¹³ that the fire was already in her flat on floor 22.¹¹⁴ He told Rosemary Oyewole¹¹⁵ in Flat 113 on floor 14 that the fire was on floor 3 when responding to the call she made at 01.37.58¹¹⁶ and told Roy Smith in Flat 95 on floor 12 that it was on floor 4 when responding to the call he made at 01.44.33.¹¹⁷ CRO Duddy said that Roy Smith was “well away from” it.
- d. While responding to the call made by Jessica Urbano Ramirez at 01.29.48 CRO Russell told her that the fire was on floor 4,¹¹⁸ because she thought that, although it might have moved, it was not anywhere near where Jessica was.¹¹⁹ Jessica told CRO Russell that “there’s fire in the house”, but she repeated her assurance to Jessica that the fire was below her, on floor 4.
- e. When he called the control room at 01.25.16 from Flat 111 on floor 14, Denis Murphy told OM Norman that fire was “coming right past my window from next door”, but she told him that the fire was actually on floor 4.¹²⁰ Denis Murphy repeated that it was on floor 14, but she corrected him, saying, “No, it’s on the 4th – 1, 2, 3, 4”. OM Norman told

¹⁰⁷ [LFB00000310].

¹⁰⁸ Duddy Day 42/207/22-208/5.

¹⁰⁹ [LFB00000306].

¹¹⁰ [LFB00000307].

¹¹¹ Duddy Day 42/208/6-209/2; also in relation to the call at 01.44.43 from Roy Smith in Flat 95, floor 12 [LFB00000324]; Duddy Day 42/219/25-220/5.

¹¹² [LFB00000315].

¹¹³ [LFB00000310].

¹¹⁴ Duddy Day 42/215/1-6.

¹¹⁵ [LFB00000678].

¹¹⁶ Duddy Day 42/218/11-19.

¹¹⁷ [LFB00000324].

¹¹⁸ [LFB00055504] p. 3.

¹¹⁹ Russell Day 76/29/1-6.

¹²⁰ [LFB00000308] p. 2.

the Inquiry that she thought that Denis Murphy had meant that smoke was outside his window, not fire, and that she had not learnt from her discussion with him that the fire had spread.¹²¹ She said that it was her sense of disbelief that the fire could have reached floor 14 that had led her to correct him.¹²² The upshot was that in her call to CU8 at 01.35.24 she did not pass on the information that the fire had already reached floor 14.¹²³

- f. At 01.30.02 OM Norman took a call from Farah Hamdan in Flat 175 on floor 20, in which she reported that her neighbour's flat was on fire and that smoke was coming into her own flat.¹²⁴ OM Norman told her, however, that the fire was on floor 4. Like CRO Gotts, OM Norman was unaware of the call CRO Duddy had received at the same time from Mariem Elgwahry, in which she had told him that the fire had reached the top of the building.¹²⁵ Moreover, she did not put the information she had obtained from Farah Hamdan together with the information she had obtained from her recent conversation with Denis Murphy and still thought that more smoke than fire had reached that far up the building.¹²⁶ In hindsight, OM Norman accepted that there was a risk that, in telling the caller that the fire was far away, she had given her to understand that she should not be concerned.¹²⁷
- g. When responding to the call made at 01.39.15 by Hesham Rahman from Flat 204 on floor 23, OM Norman told him that the fire was on floor 4.¹²⁸
- h. In a call made at 01.46.18 Sener Macit in Flat 133 on floor 16 told CRO Adams that there was smoke coming under his door.¹²⁹ She told him that the firefighters were dealing with a fire on floor 4. He questioned that, but she confirmed it, despite the fact that during a call made at 01.38.18 Zainab Deen in Flat 115 on floor 14 had told her that fire was coming through her door.¹³⁰ CRO Adams accepted in her evidence that by that time she had known that the fire was not contained on floor 4 and that that was probably the wrong information to give the caller. She could not explain why she had said it otherwise than by saying that she did not have any other information and that was what she definitely knew at the time.¹³¹ She blamed the lack of information from the incident ground, saying:

“...we had no clarification at that point as to where the actual fire was spreading to, other than what was coming in from the callers. But nothing specific from the ground itself.”¹³²
- i. CRO Howson was told in a call at 02.10.31 from Hashim Kedir in Flat 192 on floor 22 that the fire was in their kitchen.¹³³ However, about a quarter of the way into the call, CRO Howson insisted that the fire was on floor 4. She explained to the Inquiry that (even after some 40 minutes of continuously handling FSG calls)¹³⁴ she had not appreciated that the fire was affecting flats that high up in the building. She had assumed that the

¹²¹ Norman Day 42/105/16-106/3, 107/3-6.

¹²² Norman Day 42/144/1-145/13.

¹²³ [INQ00000194].

¹²⁴ [LFB00000314].

¹²⁵ Norman Day 42/85/17-86/24.

¹²⁶ Norman Day 42/66/8-9.

¹²⁷ Norman Day 42/108/12-110/4.

¹²⁸ [LFB00000329].

¹²⁹ [LFB00000326].

¹³⁰ [LFB00000321].

¹³¹ Adams Day 80/52/19-53/23.

¹³² Adams Day 80/53/25-54/3.

¹³³ [LFB00000345].

¹³⁴ As OM Norman put it in her witness statement [MET000080589] p. 5 “[B]etween 01.20 to 2ish all hell broke loose”.

fire was still on floor 4 because that was where the original fire had been and that, as she put it:

“... it did not do what other fires do. It just, it shouldn’t have happened, you know, the fire shouldn’t have been there.”¹³⁵

- 29.70 CRO Howson’s evidence stands in striking contrast with that of OM Norman, who said that shortly after 01.30 she had started to become aware that the control room was receiving calls saying that the whole block was on fire from top to bottom.¹³⁶ Indeed, by 01.33, there had been calls reporting fire in a number of flats involving 15 adults and three children.¹³⁷ By 02.00 those numbers had grown significantly. It is apparent that the control room as a whole had failed to understand that the fire had spread a long way from its point of origin and was affecting occupants right up the tower. OM Norman ought to have ensured that what she had learnt about the development of the fire was swiftly made known to all the CROs.

Failing to obtain sufficient information

- 29.71 On the night of the fire CROs routinely failed to ask callers for their flat numbers, the number of people in the flat, and information about people whose mobility or other health or personal problems might impede their escape. CROs also failed to obtain or provide the command units with sufficient information about conditions being experienced by callers in order to enable them to prioritise rescues.

Flat numbers

- 29.72 It is obvious that CROs answering calls from high-rise residential buildings must at least obtain the flat numbers of callers who are reporting fire or smoke. SOM Smith confirmed that in the case of FSG calls she would be surprised if CROs were providing advice to callers for whom they had no flat number.¹³⁸
- 29.73 However, on the night of the fire some CROs frequently failed to ask callers for their flat numbers. For example, CRO Gotts did not seek that information from Naomi Li during the call she made at 01.30.38¹³⁹ but was unable to explain that omission. Nor did she seek that information from Meron Woldeeslase Araya and Lina Hamide during the call they made at 01.47.49.¹⁴⁰ In that case she attributed her omission to the volume of calls coming in.¹⁴¹ Nor, again, did she seek that information from Karen Aboud’s elder son during the call he made at 02.15.07;¹⁴² again, she could give no reason for not having obtained the caller’s flat number.¹⁴³ CRO Gotts was by no means the only one who failed to obtain that information. CRO Fox failed to obtain the number of Anthony Disson’s flat when he called at 01.30.08¹⁴⁴ and CRO Duddy failed to obtain the location of Mariem Elgwhary, who had moved from Flat 196 on floor 22 to Flat 205 on floor 23 by the time she called at 01.30.00.¹⁴⁵

¹³⁵ Day 80/154/21-155/10.

¹³⁶ Day 42/84/12-14.

¹³⁷ Damiana Louis (Flat 96, floor 12) at 01.24.57; Helen Gebremeskel (Flat 186, floor 21) at 01.26.54; Katarzyna Dabrowska (Flat 95, floor 12) at 01.26.58; Shah Ahmed (Flat 156, floor 18) at 01.27.26; Zainab Deen (Flat 115, floor 14) at 01.29.02; Jessica Urbano Ramirez (Flat 176, floor 20) at 01.29.48; Mariem Elgwhary (Flat 196, floor 22) at 01.30.00; Farah Hamdan (Flat 175, floor 20) at 01.30.02; Biruk Haftom (Flat 201, floor 23) at 01.32.10; Abdeslam Sebbar (Flat 81, floor 11) at 01.33.12.

¹³⁸ Smith Day 22/80/1-25.

¹³⁹ [LFB00000311]; Gotts Day 43/168/24-169/5.

¹⁴⁰ [LFB00000330].

¹⁴¹ Gotts Day 43/179/23-180/6.

¹⁴² [LFB00000346].

¹⁴³ Gotts Day 43/187/21-188/1.

¹⁴⁴ [LFB00000459].

¹⁴⁵ [LFB00000310].

29.74 It is not easy to understand why in each case the information was not sought when it was obviously essential, nor why the omission was so widespread. Although the sheer press of calls might have provided an explanation later in the night, it does not satisfactorily explain why the information was not obtained in the early stages of the incident.

Number of persons

29.75 Both PN539 and PN790 require CROs to ask the caller how many people are involved, but some CROs frequently did not seek that information. Again, by way of example only, CRO Gotts failed to obtain that information from Naomi Li during a call made at 01.30.38,¹⁴⁶ or from Roy Smith during a call made at 01.38.37 (even though he told her that there were children in the flat),¹⁴⁷ or from Meron Woldeselassie Araya and Lina Hamide during a call made at 01.47.49.¹⁴⁸ CRO Duddy failed to obtain that information from Natasha Elcock in the course of a call made at 01.28.26,¹⁴⁹ or from Mariem Elgwhary during a call made at 01.30.00,¹⁵⁰ or from Hashim Kedir during a call made at 01.34.50.¹⁵¹ Similarly, CRO Russell failed to obtain that information from Natasha Elcock in the course of a call made at 02.32.41.¹⁵²

Mobility, health or other vulnerabilities

29.76 CROs were not trained to ask callers whether they had any physical disabilities or other personal attributes (such as old age, the presence of young children or pregnancy) which might hamper their escape. It is therefore unsurprising that they did not ask callers about such matters, but left it to them to volunteer that information.¹⁵³ OM Norman said that they would expect the caller to tell the CRO “pretty quickly” that they had impaired mobility if they thought they were trapped.¹⁵⁴ Likewise, CRO Gotts said that she did not explore with callers whether they had impaired mobility but that it was something they normally mentioned themselves.¹⁵⁵ That was not invariably the case, however. Sometimes callers did raise it: for example, Mariem Elgwhary told CRO Howson of her mother’s medical conditions during the call she made at 02.25.38 and Hesham Rahman told CRO Russell about his mobility problems when he called at 02.36.07.¹⁵⁶ Sometimes, however, they did not: Nicholas Burton did not mention his wife Pily’s disability either when he called at 01.56.20 or when he called again at 02.13.03.

29.77 If callers did volunteer information of that kind, they often did so only when the CRO had got to the point of exploring whether they could leave, which itself depended on the CRO’s considering that question before moving to the next phase. In practice, however, CROs routinely moved to the “protect” phase without first investigating fully the possibility of safe escape. In such cases they were unlikely to have reached the point of discovering whether the caller had personal difficulties of a kind that might need to be taken into account by firefighters. That seems to have been the practice in other control rooms too, but it was exactly what paragraph 294 of the LFB Lakanal Report warned against.

¹⁴⁶ [LFB00000311].
¹⁴⁷ [LFB00000318].
¹⁴⁸ [LFB00000330].
¹⁴⁹ [LFB00000307].
¹⁵⁰ [LFB00000310].
¹⁵¹ [LFB00000315].
¹⁵² [LFB00000360].
¹⁵³ For example, Adams Day 80/91/20-92/6; Howson Day 80/139/23-140/4; Gotts Day 43/208/5-25.
¹⁵⁴ Norman Day 42/60/15.
¹⁵⁵ Gotts Day 43/208/11-25.
¹⁵⁶ [LFB00000368].

Conditions at the caller's location

- 29.78 PN539 and PN790 require CROs to obtain information about conditions at the caller's location. Both policies give examples, such as heavy smoke, thick smoke, slight smoke, as well as the caller's proximity to the fire, if known. However, that information was not always obtained by CROs on the night of the fire. When they were told that smoke was entering a flat or that the caller was trapped by smoke, they often did not seek any more precise information about conditions,¹⁵⁷ with the result that such information could not be passed to the incident ground. Its absence led WM Meyrick to ask CRO Adams at 01.50.09 to obtain information from callers about smoke logging and the nature of the smoke to enable him to prioritise calls. However, CRO Adams did not pass that message on to anyone else in the control room and so that information was not obtained, unless the caller volunteered it.

Failing to remain on the line with the caller

- 29.79 As already mentioned, PN539 defines an FSG call as one where the CRO stays on the line with the caller. It is an unsatisfactory definition, but it is reasonably clear that a CRO handling a call from a caller who is trapped and cannot escape should normally stay on the line. However, on the night of the fire, CROs were generally unable to do that. Instead, they advised callers to seal the places where smoke was getting in with wet towels and await rescue, before ending the call in order to take the next one in the queue. That departure from policy was necessary to enable the control room to cope even at a basic level with the number of FSG calls being received from the tower. Between 01.26.27 and 06.14.47 CRO Gotts handled the highest number of 999 calls, about 70 in all, and there is no doubt that the control room was overwhelmed.¹⁵⁸ Very few calls lasted more than about three minutes because the CROs did not have the luxury of time. They were trying to get through as many calls as possible and pass the relevant information to the incident ground to enable rescues to be carried out. It was a matter of judgement for each CRO whether and when to let callers go.¹⁵⁹
- 29.80 The exceptions, such as CRO Russell's 55-minute call with Jessica Urbano Ramirez and CRO Fox's 33-minute call with Marcio Gomes, appear to have occurred at random. When asked why she had stayed on the line with Marcio Gomes but with none of the other callers she had spoken to that night, CRO Fox had no explanation and described the circumstances as "very alien to all of us in the control room that night".¹⁶⁰
- 29.81 The one benefit of CROs' not staying on the line with callers was that other callers did at least get through to the control room and were able to give information to the CROs which in general was passed on to the incident ground. However, it also meant that the CROs almost never gave proper FSG advice tailored to the individual caller and the changing conditions they faced as the call progressed, as contemplated in the RIFs.
- 29.82 Individual CROs cannot be blamed for not staying on the line to continue what were on any view FSG calls. PN790 and PN539 did not contemplate that there would ever be more FSG calls than the number of CROs available to handle them in accordance with the guidance they provided. It was a problem caused by the volume of calls generated by the fire and not intrinsically a shortcoming in the way that CROs carried out their role. However, the very fact

¹⁵⁷ For example, call at 01.26.58 with Katarzyna Dabrowska [LFB00000309]; call at 01.30.38 between Naomi Li and CRO Gotts [LFB00000311/INQ00000472]; call at 01.28.26 between Natasha Elcock and CRO Duddy [LFB00000307]; call at 01.34.50 between Hashim Kedir and CRO Duddy [LFB00000315]; call at 01.38.37 between CRO Gotts and Roy Smith [LFB00000318]; call at 01.40.17 between CRO Howson and Denis Murphy [LFB00000322].

¹⁵⁸ LFB Control Report.

¹⁵⁹ Adams Day 80/94/15-18.

¹⁶⁰ Fox Day 80/227/19-228/8.

that FSG calls were almost invariably being terminated prematurely by CROs in order to enable them to take incoming calls ought to have alerted the more senior officers in the control room to the fact that it had become impracticable to give proper FSG advice to callers; and that in turn ought to have prompted them to inform the incident commander, who might then have considered whether a full or partial evacuation of the building should be undertaken. The fact that that did not happen represented a failure of communication between the control room and the incident ground.

6 Managing information

Failing to share information

- 29.83 In the early stages of the fire, FSG information relating to individual calls was passed to the incident ground by radio. Before long, however, members of the control room attempted to collate FSG information from several calls for transmission to the incident ground. OM Norman collected information from four calls to pass to the incident ground by admin line at 01.35.24, although she said that she had done so because she had not thought that CRO Sharon Darby had been able to get through to the ICP on the radio.¹⁶¹ She did the same again at 01.47.44. CRO Adams took information from CRO Pam Jones who was responding to a call from the El Wahabi family and passed it to CU8 at 01.50.49 using the admin line, together with information from a call she had taken herself.¹⁶² Following that, CRO Adams went round the control room on her own initiative just before 02.00 and collected details of flats from which FSG calls had come. At 02.00.34 she called CU8 on the admin line and passed information relating to five flats to the officer in charge.¹⁶³ However, neither OM Norman or AOM Real, nor CRO Darby, the radio operator, was aware of what CRO Adams had done. CRO Adams accepted that it was likely that information had been duplicated, but thought that it was better for CU8 to have had it twice than not at all.¹⁶⁴
- 29.84 One significant matter that emerges from the evidence is that, apart from those early improvised efforts to organise the transmission of FSG information, CROs were unable to compare what they were being told by callers with the information obtained by their colleagues or with the limited information being received from the incident ground. As a result, they did not grasp the scale of the fire and continued to assume that it could not have spread as quickly and as far as it had. However, the CROs also failed to compare what they were told about the development of the fire with what they themselves had been told by previous callers. They were unable to explain that omission otherwise than by saying that they had received no confirmation from the incident ground of what they had been told.
- 29.85 Their difficulty in understanding the development of the fire resulted from three things: first, an unquestioned assumption that fires in high-rise buildings will not in any circumstances spread through the building, either quickly or at all; secondly, a complete lack of information from the incident ground; and thirdly, the absence of any system enabling CROs to share information obtained from callers in order to gain an understanding of what was happening inside the building.

¹⁶¹ Norman Day 42/76/18-77/4.

¹⁶² [INQ00000203].

¹⁶³ [INQ00000195].

¹⁶⁴ Adams Day 80/67/1-70/14.

- 29.86 For reasons that have already been explained, by 2017 the assumption that fires in high-rise buildings would not in any circumstances spread through the building was no longer one that could properly be made, given that by that time the LFB knew that certain kinds of high-rise buildings could present a risk of rapid and unpredictable fire spread.¹⁶⁵ Whether CROs were given any information on that subject is a question that must be explored in Phase 2.
- 29.87 The lack of information from the incident ground represented a signal failure to observe some of the key principles of PN790. One of the main purposes of PN790 was to ensure that critical information about the incident and the progress of FSG calls was exchanged between the incident ground and the control room. The requirement to send the control room information about the action being taken in response to FSG calls was set out in mandatory terms in PN790,¹⁶⁶ which recognised that it would enable the control room to give callers information that would be beneficial to them.¹⁶⁷ For the first hour and a half of the incident the only information about the fire which the incident commander sent to the control room was that which was received in the informative message recorded at 01.16.02: that a fourth floor flat was 75% alight. Despite four telephone conversations between WM Meyrick and OM Norman and CRO Adams, WM Meyrick gave them no information about the development of the fire, the conditions in the building or the progress of crews deployed in response to FSG calls and neither OM Norman nor CRO Adams asked for it. Similarly, SM Jason Oliff was not given information of that kind when he started to speak to WM Meyrick by mobile phone at 02.06. At some point he was told that firefighters were having difficulty reaching floor 15, but that appears to have been all. The failure of the incident commander, or anyone else, to tell the control room that the fire had spread well beyond the flat of origin meant that the CROs continued to give wrong information and advice to callers. It was a failure on the part of OM Norman not to press the officers in the command unit (principally WM Meyrick) to give her the information that her CROs needed.

Access to NPAS helicopter information

- 29.88 The lack of information available to control room officers could have been mitigated by access to national television news and by the availability of a functioning link to the NPAS helicopter. The Stratford control room, unlike that at Merton, had no heli-tele downlink facility, a fact identified as an action point in the LFB's post-incident IMP Report.¹⁶⁸ As matters turned out, the presence of a functioning heli-tele downlink in the Stratford control room would have made no difference on the night of the Grenfell Tower fire, because the NPAS helicopter images of the fire could not be received by the LFB due to a technical defect explained elsewhere in this Report.¹⁶⁹ However, had a heli-tele downlink been available to the control room, it would have provided valuable information to the CROs, because the images transmitted by the helicopter after its arrival at around 01.44 clearly showed that the fire had reached the top of the building.¹⁷⁰ It would immediately have made the CROs aware that the fire was no longer contained on floor 4. OM Norman said that the heli-tele downlink was never used and that she had never had any experience of using it in relation to a fire in a high-rise building,¹⁷¹ but the incontrovertible evidence was that, if the control room had been located at Merton and the technical defect had not arisen, it would have been available to the CROs.

¹⁶⁵ Refer to LFB's Tall Building Facades slide presentation of October 2016 [LFB00003521].

¹⁶⁶ Paragraphs 9.1 to 9.3.

¹⁶⁷ Paragraph 7.10.

¹⁶⁸ [LFB00003114]; [MET00012593] p. 62.

¹⁶⁹ Chapter 30.

¹⁷⁰ [MET00012593] p. 62 (image 5).

¹⁷¹ Norman Day 42/170/1-14.

Access to broadcast information

29.89 The Stratford control room was equipped with a 45-inch screen television. It also had a smaller portable television.¹⁷² The normal practice in Merton is for the television to be on all the time to provide control room staff with up-to-date news feeds from public television news providers.¹⁷³ On the night of the fire, the large television screen in the Stratford control room was not working and OM Norman decided at the start of the shift not to turn on the small television.¹⁷⁴ Whether it would have been helpful for the CROs to have had images of the fire available throughout the night was a difficult question for them to answer. Although a number of them said they could not be sure if it would have helped,¹⁷⁵ CRO Adams said that she had had experience of watching the television on the night of the riots in London and thought that it was always good to be aware of what was happening.¹⁷⁶ Despite the obvious risk that disturbing images might have distracted some, seeing the pictures on television would have helped to avoid the confusion and bewilderment felt by many CROs who were unable to understand what was happening. As CRO Adams said:

“So when they’re telling us that the fire’s on the top floors, you could see they really do mean it’s on the top floors. And knowledge is always good. The more knowledge you have, it’s always helpful.”¹⁷⁷

29.90 The first recorded images of the fire taken by the Press Association and recorded by the BBC are timed at 01.30.¹⁷⁸ It is therefore likely that if the television had been on, it would have enabled the CROs to understand better the situation in which they were placed and would have helped them to give accurate and realistic advice to callers, at least in the early stages of the fire.

29.91 The lack of any means whereby CROs can share important information calls for a technological solution. In order to provide high quality FSG advice it is also necessary to devise a system of information collection, collation and dissemination in the control room so that the information provided by callers is gathered together and made available to all CROs and the incident ground continuously as an incident progresses.

Conclusions

29.92 On the evidence, I am unable to reach any conclusive findings about whether the failures by CROs to obtain and share information about the matters I have identified led to adverse consequences for any particular individual, let alone materially contributed to any death. However, those omissions in information-gathering not only reveal a widespread failure to comply with the relevant requirements of GRA 3.2 and PN790 but also meant that at no time did any incident commander have the information required to prioritise rescues should they have wanted to use it. GRA 3.2 emphasises that control operators are in a much better position than those on the incident ground to obtain more accurate information about the location of the fire and persons in need of rescue, and that it is that information that should be used by the incident commander to confirm and reassess priorities. WM Meyrick told the

¹⁷² Norman Day 42/1-13.

¹⁷³ By comparison Merton had two 70-inch televisions, one of which showed news coverage and the other operational information: Smith Day 21/94/12-19, 21/95/16-98/16; Adams Day 80/111/9-11.

¹⁷⁴ Norman Day 42/98/1-24.

¹⁷⁵ Howson Day 80/144/14-18, 166/23-167/9; Gotts Day 43/147/9-14.

¹⁷⁶ Adams Day 80/112/3-10.

¹⁷⁷ Adams Day 80/112/18-113/2.

¹⁷⁸ BBC Timeline images [MET00004561].

Inquiry that, on the night, he was unable to prioritise calls effectively due to the lack of vital information about conditions,¹⁷⁹ although in fairness to the control room staff it seems that he only asked about priorities once.¹⁸⁰

- 29.93 The CROs' failure to provide the basic information that each of them should have obtained from callers meant that the incident commander had little chance of being able to establish an effective system of prioritisation. In the final analysis, that may not have mattered much because, despite some effort in CU7 to establish priorities by reference to whether those trapped were children and elderly, the system of deploying crews in response to FSG information on the incident ground never evolved much beyond "first come first served".

7 The revocation of the "stay put" advice

The decision made by SOM Smith and DAC Fenton at around 02.35 to revoke the "stay put" advice represented a fundamental change in the LFB's response to the incident. They made that decision on the basis of the nature and length of the FSG calls, the limited information they had received from the incident ground that crews could not get above floor 15 and SOM Smith's experience of the Lakanal House fire. They did so without any visual information about the building and without any discussion with the incident commander (at that point DAC O'Loughlin), as required by paragraph 8.7 of PN790. As SOM Smith explained, there was "no way" that callers could wait to be rescued. It cannot have been an easy decision to make, and it was one for which there was no precedent or established guidance. I pay tribute to the judgement of SOM Smith and DAC Fenton in making it.

The communication of the new advice to CROs

- 29.94 Following the decision to abandon the "stay put" advice at around 02.35, SOM Smith instructed OM Norman to tell the CROs that the advice to callers was now that they must leave the building. SOM Smith's evidence was that the CROs "might need to use more forceful and blunt language to emphasise the necessity to evacuate the building".¹⁸¹ Never before in the history of the LFB had such an instruction been given by a control room senior officer and there is no doubt that implementing it and giving advice of that kind to callers was stressful and difficult for most CROs, as well as wholly outside their experience.
- 29.95 Although the senior control room staff did not know exactly what conditions were like in the communal lobbies and stairs (since they had not received any relevant information from the incident ground), they were aware that they were poor and that there was heavy smoke logging.¹⁸² SOM Smith was right to tell CROs to use forceful language because callers would realise that they were being asked to go out into extremely hostile conditions and might otherwise retain a lingering hope that they might be rescued. She told OM Norman that CROs should tell callers that they had no choice but to leave the building and when she gave evidence, strongly resisted any suggestion that CROs should leave the decision to the callers themselves.¹⁸³
- 29.96 OM Norman communicated the new advice to CROs by showing each of them a message on an A4 piece of paper and asking them to confirm that they understood it.¹⁸⁴ As she recalled it in her witness statement, the new advice was that callers should get out of the building,

¹⁷⁹ Meyrick Day 20/75/3-20.

¹⁸⁰ In his admin line call with CRO Adams at 01.50.49 [INQ00000203].

¹⁸¹ Smith witness statement [MET00007766] p. 4.

¹⁸² Smith Day 22/127/24-129/24, 139/11-140/8.

¹⁸³ Smith Day 22/165/18-167/14.

¹⁸⁴ Norman Day 42/157/3-22.

putting wet towels over their heads.¹⁸⁵ In her oral evidence she also recalled that she had told CROs to advise callers to hold hands. Her near-contemporaneous note records that she told each CRO individually that callers “had to try and leave the building” and “try and get out”.¹⁸⁶

- 29.97 AOM Real also played a part in instructing the CROs that the advice they were to give had changed. However, as she said, she had simply passed on the new advice to CROs without telling them what kind of language or tone to use, leaving it to each individual CRO to decide how to deliver it.¹⁸⁷
- 29.98 It seems that the message to be blunt and forceful with callers may not have reached all CROs, because they did not in fact always give the new advice in the uncompromising language SOM Smith had required. In some cases the urgency reflected in the warning recorded in the control debrief notes that it could be the caller’s last chance was lacking. That much appears clearly from the tenor of some of the advice given to those who called after about 02.35. Although in the end it was for the CRO handling the call to decide how best to deliver advice of that kind, SOM Smith accepted that some CROs were left with the impression that callers still had to decide for themselves whether it was safe to leave.¹⁸⁸

How the new advice was communicated to callers

- 29.99 Many CROs did not fully grasp the uncompromising nature of the advice they had been instructed to give, or were understandably reluctant to give it. As a result, after about 02.35 many CROs continued to give callers the impression that they should decide whether to leave or not. That was contrary to SOM Smith’s instructions. Making reasonable allowance for the time required to enable the new instructions to reach all CROs, some of the advice subsequently given by CROs was far from unequivocal. Three examples suffice:
- a. During the call made by Bassem Choukair at 02.43.55 and taken by CRO Adams¹⁸⁹ she told him: “Well, we are trying to get to you but it’s very difficult...you make the decision whether you think you need to leave or not”.
 - b. When responding to the call made at 02.51.09 by Naomi Li CRO Russell advised her that “your best bet is to try to leave”,¹⁹⁰ and used the expression “best bet” three times. She explained in her oral evidence that that was “because no choice is 100% safe, but that was the best one I was offering”. She also told Naomi Li that it was for her to decide whether it was safer to leave or to stay. CRO Russell explained that she had put it in that way because sending the caller out into the fire and smoke could have led to her death, whereas she had thought there was a chance of rescue if she stayed.¹⁹¹ She could not recall in any detail what advice SOM Smith had told her to give or whether she had been told to advise callers that they should leave at all costs. She thought that there would always be an element of judgement, rather than just advising them to get out, come what may.¹⁹²
 - c. In the call she made at 03.03.05 Natasha Elcock told CRO Gotts that she could not get out. Although CRO Gotts did advise her to leave, she also told her that she would tell the crews which flat she was in. The advice given was not the unequivocal advice that she

¹⁸⁵ [MET000080589] p. 7.

¹⁸⁶ [MET00005199] p. 3.

¹⁸⁷ Real witness statement [MET00007696] p. 6; Real Day 43/51/20-53/1.

¹⁸⁸ Smith Day 22/166/7-18.

¹⁸⁹ [LFB00000376] p. 4.

¹⁹⁰ [LFB00000386] p. 8.

¹⁹¹ Russell Day 76/63/17-64/1.

¹⁹² Russell Day 76/64/13-65/8.

had no choice but to leave. When giving evidence Natasha Elcock said that if someone had told her that there was no fire in the stairs she would have tried to go down.¹⁹³ At the time, she believed that the fire was below her and had therefore thought that she should stay in her flat, where she was relatively safe.

29.100 On the other hand, some CROs did use blunt and forceful language. For example:

- a. When answering the call made by Alemishet Demissie at 02.42.40,¹⁹⁴ CRO Duddy said: “If you don’t do what I tell you you’re going to die in that flat. Okay? I know it’s really harsh but that’s the truth. Right?” He told her to cover her face with a wet towel, leave her flat and get to the stairwell.
- b. CRO Duddy took a second call from Alemishet Demissie shortly afterwards at 02.58.44,¹⁹⁵ in which he told her that she should cover her face and get to the stairwell and that that was her “only option”. He said: “Listen carefully, okay. Your only chance of surviving this fire is to cover your face with a wet towel and get to the stairwell and make your way downstairs, okay?” He went on: “this is your only chance”.¹⁹⁶
- c. CRO Howson adopted the same approach in a number of calls, forcefully telling callers that they had to listen to her while she gave them instructions to leave their flat, go down the stairs, keep their nose and mouth covered with wet towels and stay together.¹⁹⁷

29.101 As the incident progressed, CROs also faced a dilemma when they were told by a caller that they had tried to leave but had been unable to do so because of conditions outside or that they could not leave because of a disability. In some instances CROs reverted to advising the caller to protect themselves, suggesting that there was a chance of rescue, even though they had not received any information from the incident ground on which to base it. For example:

- a. When in the call he made at 02.55.38 Marcio Gomes told CRO Gotts that they had tried to leave but could not get out, she advised him to block out the smoke and to get fresh air. When she gave evidence, she explained that in such cases she had taken callers at their word because she had thought that they would know the situation outside better than she did. She was not sure if she had been told at any time that crews could not get above floor 15 and she accepted that she should have advised Marcio Gomes more forcefully to leave. She accepted that she had not sought help or advice from a supervisor.¹⁹⁸
- b. Similarly, in a call she made at 03.04.52, Natasha Elcock¹⁹⁹ told CRO Gotts that she could not get out because it was too hot and begged her to send a forklift truck or cherry picker to get her out. In response, CRO Gotts advised her to stop the smoke coming in and told her that there were more aerial ladders coming. The caller was not advised to leave; on the contrary, she was given unfounded assurances that rescue ladders were arriving.
- c. CRO Gotts gave similar assurances about the imminent arrival of long ladders to the callers from Flat 193 on floor 22 during the call they made at 03.08.56.²⁰⁰

¹⁹³ Elcock Day 70/99/22-70/101/24.

¹⁹⁴ [LFB00000683] p. 12.

¹⁹⁵ [LFB00000680] p. 2.

¹⁹⁶ Alemishet Demissie and her friend Ethiopia Assefa were rescued by FFs Sanders, Tucker and Charity shortly after 03.00.

¹⁹⁷ Refer to calls at 03.07.13 [LFB00000404] and 03.17.05 [LFB00000418].

¹⁹⁸ Gotts Day 43/210/6-211/23.

¹⁹⁹ [LFB00000401] p. 3.

²⁰⁰ [LFB00000406] p. 3.

- d. When responding to the call made by Hesham Rahman²⁰¹ at 03.10.34, CRO Russell advised him that his “best bet”²⁰² was to leave. He explained that he could not see because of the smoke and that he was disabled. She assured him that the crews “... are coming to you, I promise they are coming to you”.

- 29.102 The difficulties in providing clear and unequivocal advice to leave at all costs were not limited to CROs. In the call made at 03.33.36, Natasha Elcock told AOM Real that she had already tried to leave but had been unable to do so. AOM Real advised her repeatedly to leave but Natasha Elcock told her that she could not do so. AOM Real then changed her approach and advised her to stay in the flat as long as she possibly could and told her that firefighters were trying to get to all floors.²⁰³ AOM Real explained in evidence that, when Natasha Elcock had told her that she could not leave, she had believed that she could not get out and so did not try to assist her to assess the conditions outside her flat. She explained that she had advised her to lie on the floor and stay there as long as possible in order to protect her. She thought that was consistent with the instruction given to the CROs to tell callers to leave, because she had already told her that the advice was to leave.²⁰⁴
- 29.103 It is important neither to underestimate the pressures on CROs working under such difficult circumstances nor to overlook the unprecedented nature of the advice. However professional the CROs may have been and however experienced and well trained, it must have been extremely difficult for them to give advice and support to people whom they knew were likely to die in the building if they were unable to escape without assistance. It is understandable that, if a CRO was persuaded that the caller was indeed trapped with no realistic possibility of escape, they should offer such comfort as they could. However, as became clear in due course, some of those, such as Natasha Elcock, who said they were trapped and who received comforting advice, were in fact able to escape when urged strongly enough to do so.
- 29.104 All this points to the conclusion that although SOM Smith had attempted to convey to CROs through OM Norman and AOM Real the importance of emphasising to callers that they needed to leave the building at all costs, she and they had failed to bring it home to them clearly enough. The change of message from advising people to remain in their flats and protect themselves to advising them to leave the building even though in the face of thick smoke was, no doubt, a wholly new and unprecedented experience for most CROs and one not covered by any policy or training. In those circumstances the senior control room officers should, where possible, have monitored the advice being given by individual CROs to ensure that they understood that they were expected to tell callers in simple and direct terms to leave the building regardless of the conditions they encountered in the lobbies and on the stairs and not appear to leave it to their own judgement. Although it would have been impossible to monitor each and every call, the senior managers should have ensured that the CROs as a group were able to convey that message in the right terms and seek assistance and support if they encountered difficulties in conveying it to a particular caller. That was particularly so, given that CROs had never previously had to advise occupants of a high-rise block to make their own way out without help from firefighters.

²⁰¹ [LFB00000409] p. 3.

²⁰² The same expression she had used on her call with Naomi Li at 02.51.09: [LFB00000386] p. 8.

²⁰³ [LFB00000425].

²⁰⁴ Real Day 43/47/4-24.

Calling back

- 29.105 According to SOM Smith it was a longstanding, historic custom and practice of the LFB's control room not to call previous callers back. The practice dates from a time when most calls were made from landlines and was based on the notion that it is dangerous to call a landline in a building on fire, since returning to answer it might expose the occupant to danger.²⁰⁵
- 29.106 It is possible that this antiquated practice may have been part of the reason why CROs did not in general call back those who had previously called from the tower and it is certainly the case that neither SOM Smith nor OM Norman instructed CROs to try to call previous callers back. However, the practice was not invariably followed in respect of those who had called using mobile telephones and CRO Russell went as far to say that it did not apply to mobile numbers.²⁰⁶ CROs did generally call back those using mobile telephones if they had been unable to obtain enough information from a caller or a call had been abandoned.²⁰⁷ In some instances on the night of the fire some CROs did call people back. For example, CRO Duddy called back the Tekles at 03.02.35, following a call to him by Essex FRS (CRO Russ White) at 03.00.10.²⁰⁸ (CRO White had already received calls from Paulos Tekle at 02.48 (abandoned) and 02.51 and had himself called back three times at 02.50, 02.54 and 02.56.)²⁰⁹ In the call with CRO Duddy at 03.00.10, CRO White gave him Paulos Tekle's mobile telephone number and told CRO Duddy that he had spoken to a caller in Flat 153 who was trapped together with three other adults and five children.²¹⁰ CRO Duddy told CRO White that the advice was now to get out and he then rang the number that CRO White had given him. In general, however, calling previous callers back to advise them of a change in advice was outside the experience of control room staff.²¹¹
- 29.107 The main obstacle in the way of calling back previous callers was that only the numbers of the last four callers were readily accessible on the VISION system.²¹² If a CRO wanted to find the number of any earlier caller they would have to search the incident replay section on the ICCS screen (which contains a log of all telephone numbers that have previously called in), which would have been a time-consuming and somewhat uncertain exercise.²¹³ There was therefore no easy way for CROs to find the telephone numbers of previous callers, even if they had wanted to call them back.
- 29.108 It must be borne in mind that by 02.35 when the "stay put" advice was changed, the control room had received approximately 140 calls from members of the public, residents, relatives and family members and other control rooms and calls continued to come in. Any search for numbers of previous callers would have been a time-consuming exercise which would have diverted CROs from the important task of responding to new calls.²¹⁴ It would have been made immeasurably more difficult by the fact that the telephone numbers held in the system did not distinguish between callers trapped in their flats and members of the public outside the building, who did not need to be told that the "stay put" advice had been changed.²¹⁵

²⁰⁵ Smith Day 21/25/25-26/12, 109/8-21, 22/152/13-15. Refer also to Norman Day 42/115/21-24.

²⁰⁶ Russell Day 76/67/25-68/6.

²⁰⁷ Smith Day 21/109/8-21; Norman Day 42/115/3-5. The practice is not set out in PN539 in the section that explains "Abandoned Calls" (paragraphs 4.62-4.64) or PN412 to which paragraph 4.64 refers.

²⁰⁸ [LFB00000557].

²⁰⁹ [MET00018266] p. 5; [LFB00000691] (02.51); [LFB00000692] (02.54); [LFB00000380] (02.56).

²¹⁰ This was CRO White's call back to Paulos Tekle at 02.56: refer to [MET00018266].

²¹¹ Norman Day 42/115/11-24.

²¹² Norman Day 42/114/14-15, 116/17-18.

²¹³ Smith Day 22/151/14-21; Norman Day 42/116/6-13.

²¹⁴ Smith Day 22/151/14-21, 153/5-19.

²¹⁵ Smith Day 22/152/25-153/19.

- 29.109 It is therefore understandable that the control room staff did not attempt to call previous callers back to tell them that the advice had changed. The fact that CROs in control rooms of other fire and rescue services did call previous callers back was of occasional assistance to the LFB, but the fact that they did so does not invite adverse comparison with the LFB's control room, which was faced with many more calls.
- 29.110 The problems associated with calling back highlight the difficulties encountered by the control room as a result of a decision to change the "stay put" advice at a relatively late stage in the incident. CROs were left without the means to communicate easily with those who remained in the building.

8 Communications with other control rooms

The LFB's policy on "spate conditions" and mutual assistance

- 29.111 At the time of the Grenfell Tower fire the problems presented by an unusually large number of 999 calls were neither new nor unforeseen. On the contrary, they were the subject of detailed LFB policy provision and formal and informal arrangements with control rooms of other fire and rescue services.
- 29.112 Paragraph 3.8 of PN539 contemplates that "spate conditions" may arise if there is a surge in incoming calls due to a large number of calls relating to many incidents, or many calls relating to the same incident. In such circumstances the number of calls received may exceed the number of CROs available to answer them. PN539 does not specifically address what should be done if there is a spate of FSG calls requiring CROs to stay on the line. Paragraph 3.9 says that under spate conditions the OM may decide to "queue" non-urgent calls, rather than answering them immediately, but it does not say how an OM should determine whether a call is "non-urgent". It strongly suggests that LFB did not contemplate spate conditions involving a large number of FSG calls as distinct from "ordinary" 999 calls.
- 29.113 Under spate conditions paragraph 3.10 of PN539 requires the OM to consider, among other things, recalling "all on duty shift related personnel to Brigade Control", liaising with BT and establishing critical contact arrangements, the details of which are set out in paragraphs 3.12 and 3.13 (in short, establishing direct lines of communication between the OM in the control room and BT and the MPS respectively, commonly known as the "red phone").
- 29.114 Paragraphs 5.12 to 5.14 and Appendix 1 of PN539 describe how the LFB control room should handle requests for assistance received from other fire and rescue services when major incidents occur. It says nothing, however, about how the LFB control room should go about seeking assistance from other fire and rescue service control rooms where that is needed, although it did receive assistance from North West FRS as provided for in the agreement between them, to which I refer below.

LFB's arrangements with other fire and rescue services control rooms

The agreement with North West FRS and Staffordshire and West Midlands FRS

29.115 At the time of the Grenfell Tower fire the LFB had a tripartite contract (albeit unsigned and undated) with North West FRS and Staffordshire and West Midlands FRS, under which each control room agreed to provide reciprocal services to the others during “spike” and “spate” conditions,²¹⁶ which were defined at paragraph 1.2 of the agreement as follows:

“(a) Spike conditions [occur] where a high volume of emergency calls is received for one or more incidents over a short period of time, e.g. a vehicle fire on a motorway generating multiple emergency calls, or

(b) Spate conditions [occur] where a high volume of emergency calls are received over a sustained period of time, e.g. abnormal weather conditions (electrical storm) generating multiple emergency calls to multiple incidents involving properties struck by lightning, flooded premises, people trapped in floodwater...”

29.116 The “vision” for these arrangements was described (at paragraph 1.12) as follows:

“to develop and deliver a resilient relationship between the three busiest Fire Service Control Rooms in England, to provide support to each other and to the communities they serve, through receiving emergency calls and responding to emergencies on behalf of each other when required.”

29.117 The services set out in Schedule 1 to the agreement were to be delivered in accordance with “pre-agreed protocols” that had yet to be agreed. Critically, under paragraph 5 of Schedule 1 the “Host Control Room” (in this case that of the LFB) was (by its senior officer) to ensure that:

“a. The Assisting Control Rooms are notified of the expectation that emergency calls for the Host Control Room are likely to be received;

b. British Telecom (BT) is informed and instructed of the situation and that if it is not possible to connect to the Host Control Room, emergency calls are to be directed to the Assisting Control Rooms (using agreed predefined telephone contact numbers or BT Smart Numbers).

c. The appropriate Police and Ambulance Services whose areas are covered by the Host Control Room Service are instructed to pass emergency calls to the Assisting Control Rooms (using agreed predefined telephone contact numbers or BT Smart Numbers).”

29.118 It was the obligation of the “Assisting Control Room” to:

- a. Take and process emergency calls destined for the Host Control.
- b. Complete emergency call details using agreed documentation.
- c. Mobilise a response (if appropriate) in accordance with the criteria set out in this Agreement.
- d. Record all subsequent radio traffic and requests.

29.119 Paragraph 7 of the Schedule to the agreement required training and exercises at least annually.²¹⁷

²¹⁶ [LFB00003607]. This was in place by October 2016 at the latest, since it is referred to in the Home Office’s “Future Control Room Improvements” national document of that month [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/492400/151215_Future_Control_Rooms.pdf] p. 57. SOM Smith said that it dated back to 2012: Day 21/63/16-25.

²¹⁷ [LFB00003607] p. 10, paragraph 7.1.

- 29.120 In light of what happened on the night of the Grenfell Tower fire, it is clear that there are certain aspects of these arrangements with North West FRS which make them vulnerable to failure. First, although Schedule 1 provides that the control room senior manager²¹⁸ of the host control room should notify the assisting control rooms that they should expect to receive emergency calls, it does not contain any procedure for how assisting control rooms are to obtain details about the incident and how the host control room is to keep the assisting control rooms informed about the development of a complex incident. For example, in the case of the LFB, assisting control rooms do not appear to have automatic access to the VISION system and may therefore not know the status of the incident (e.g. in relation to the number of pumps, informative messages and FSG calls). What is more, although paragraph 5 of Schedule 1 requires that a “standard and consistent” set of documents should be used by each control room, which includes “access to pre-determined hazard and risk information as agreed by the parties”, it does not require each control room to have access to the other’s ORD. Indeed, the LFB’s control room did not even have access to the LFB’s own ORD.
- 29.121 Secondly, since all policies are designed individually and training is provided at a local, rather than a national, level, there is no guarantee that the way in which an FSG call is handled in (say) West Midlands will be the same as in London. An emergency caller during spike or spate conditions may be “tipped over” to an assisting control room, which may have a different policy or training regime governing how to deal with the call. For example, North West FRS used a coloured flow chart to guide CROs giving FSG advice that was not used by the LFB, and contained more detailed advice in clear and separate steps.²¹⁹ SOM Smith told the Inquiry, in the context of answering questions about Essex FRS control room (with whom LFB had no reciprocal agreement), that all control room staff would follow national guidance and that LFB CROs could safely assume that the Assisting Control Room had asked the right questions.²²⁰ That may or may not be correct, but there appears to have been no significant divergence of approach between the LFB control room and the control rooms of other fire and rescue services, as the Control Room Debrief report records (*“Other FRS did know guidance”*).²²¹
- 29.122 Thirdly, there was no evidence that any LFB control room officers of any rank had ever received training in the operation of these arrangements, whether specifically in respect of the contract with North West FRS or the general arrangements for spate conditions and mutual assistance under paragraph 3 of PN539.
- 29.123 Fourthly, the agreement contained no procedure to enable an assisting CRO to obtain information rapidly about conditions on the incident ground, since all communications are routed through the host control room²²² and telephone lines may become congested. The assisting control room is dependent on the host control room to inform it of any developments, such as a change in advice.²²³
- 29.124 I have set out these criticisms of the system, not because they all necessarily played a material role on the night of the fire, but so that they can be taken into account in any future discussion of how to improve control room policy and training.

²¹⁸ Capitalised terms in this section are terms defined in the agreement.

²¹⁹ [MET00018245].

²²⁰ Smith Day 21/107/21-108/22.

²²¹ [LFB00003113] p. 4.

²²² Smith Day 21/102/7-11.

²²³ Smith Day 21/102/20-103/7.

Arrangements with other non-LFB control rooms

- 29.125 Other than the contract with North West FRS and Stafford and West Midlands FRS the LFB had no formal agreements or standing arrangements with any other fire and rescue services control rooms. It was reliant on BT, as the primary call-taker for all 999 calls, to route the call to another emergency service control room if the number of calls exceeded the capacity of the control room assisting the main control room.
- 29.126 At the time of the Grenfell Tower fire the procedure was as follows. The OM or SOM would speak to BT and ask it to connect calls to neighbouring fire and rescue services, whose CROs would take the calls and pass the relevant information to the LFB control room. The call would be picked up by an LFB CRO on the ICCS system and appear as, for example, a call from Essex FRS.²²⁴ The LFB CRO would then create a new incident call record for that caller and record the details that Essex FRS had provided. There were no means by which Essex FRS could provide that information electronically; it could be transmitted only by telephone. Even though the LFB CRO would be getting the information second hand, they would assume that the Essex CRO had asked the same detailed questions of the caller that the LFB CRO would have asked had the call come through directly to the LFB control room. The caller would, or at least could, be connected directly to the LFB control room and Essex FRS would then drop out.²²⁵

Involvement of other FRS control rooms on the night of the fire

- 29.127 On the night of the Grenfell Tower fire the following control rooms handled the following number of calls relating to the fire:²²⁶

FRS	No. of calls
North West	19
Kent	7
Surrey	7
Essex	5
Merseyside	1 ²²⁷

- 29.128 Staffordshire and West Midlands FRS handled no Grenfell Tower calls despite being a party to the reciprocal agreement with LFB and North West FRS. OM Norman explained that that was because only North West FRS receive the LFB’s overflow calls whereas the Staffordshire and West Midlands FRS send their overflow calls to the LFB.²²⁸

Call-handling by North West FRS

- 29.129 As the table above shows, most of the calls handled by control rooms other than the LFB were handled by North West FRS, presumably under the contractual arrangements I have described. CRO Aisha Jabin of North West FRS gave evidence about how those would normally work in practice.²²⁹ In summary:

²²⁴ Smith Day 21/105/13-106/18.

²²⁵ Smith Day 21/110/7-111/6.

²²⁶ Newman witness statement [LFB00004691] paragraph 16 and Appendix 1 thereto. Calls to a fire and rescue service where it has had to call back the caller because the call dropped have been counted as one call only.

²²⁷ Pike witness statement [MET00013002].

²²⁸ Norman Day 42/118/4-7.

²²⁹ Jabin witness statement [MET00008028] and Day 43/60/4-67/22.

- a. If the LFB was experiencing delays of more than five minutes in answering calls, BT would pass the call to North West FRS.
- b. BT would connect the call (giving the caller's number) to any CRO in the North West FRS control room, telling them that the call was for London;²³⁰ it would also call the critical line to let the senior officers in the LFB control room know. The control room might also call the senior officer in the North West FRS control room directly to inform them of the incident, as in fact happened in the case of the Grenfell Tower fire.
- c. The North West FRS CRO would record the location and nature of the incident and pass the information to the LFB control room.
- d. The North West FRS CRO would then notify the LFB control room that they had received a call destined for London using the critical line.²³¹ The LFB control room number would be visible to the North West FRS control room on a whiteboard. Emails could also be sent.

29.130 However, on the night of the Grenfell Tower fire the arrangements between North West FRS and LFB proved to have limitations. First, there was no system whereby the North West FRS control room could communicate with the incident ground, or receive information directly from the incident ground about the progress of the fire or any rescue carried out in response to a call it had handled.²³² The only way in which the North West FRS CROs could monitor events was by using Airwave radio to listen to the LFB's channel carrying incident ground radio traffic,²³³ but that was essentially reactive. Furthermore, there was no information available to the North West FRS CROs about the nature of the premises which were the subject of the calls, other than it was a high-rise residential building.

29.131 Secondly, there were at least two serious breakdowns in communication between the two control rooms:

- a. During the call from Debbie Lamprell that started at 01.41.18 and was taken by CRO Jabin, the information she obtained about Debbie Lamprell's location changed as the call progressed. After CRO Jabin had ascertained that she was in Flat 201 on floor 23, it appears that she did not pass that information to the LFB control room and a crew was deployed to the wrong flat. It may not have been possible for CRO Jabin to give the right information to London in time for it to reach the bridgehead before the crew was deployed,²³⁴ but in any event, it is not clear why it was not passed on to London at all or, if it was, why it was not recorded anywhere.
- b. A North West FRS CRO called Zainab Deen back at 02.21.50,²³⁵ the connection having failed when BT had tried to make it. Zainab Deen told the CRO that she was in Flat 115 on floor 14.²³⁶ There is no evidence that that information was passed to the LFB, although by that point it was likely that Zainab Deen had already been moved to Flat 113.

²³⁰ For example, the call at 01.43.14 from Flat 175, floor 20 (Farah Hamdan) [LFB00000444].

²³¹ For example, the call at 01.43.00 taken by OM Norman from North West FRS, passing on details of Flat 9, floor 3 (Mariko Toyoshima-Lewis) [LFB00000688]. North West FRS had taken this call from the Glasgow BT operator at 01.36.23 [LFB00000506].

²³² Jabin Day 43/64/20-65/12.

²³³ Pomponi witness statement [MET000080600] p. 6; Basson witness statement [MET00008003] p. 4.

²³⁴ Possibly the deployment of FFs Roots and Johnson, deployed at 02.02 to Flat 161 on floor 19, which was Debbie Lamprell's flat from which she had fled up to Flat 201 on floor 23.

²³⁵ [MET00017520].

²³⁶ [MET00017520]. In the transcript, it appears that Zainab Deen says she was in Flat 115, but it is likely that by that time she had been moved to Flat 113.

29.132 Despite those defects in its operation, the system for communicating between the LFB and the North West FRS on the night of the Grenfell Tower fire was reasonably effective. Calls and information were generally passed by North West FRS to the LFB control room and the LFB did tell North West FRS when the “stay put” advice had been changed.²³⁷ Within the North West FRS control room that change in advice was shouted out by the team leaders and the North West FRS CROs knew they were expected to deliver the advice to get out in no uncertain terms. It seems that they did so.²³⁸

Call handling by other FRS control rooms

- 29.133 Apart from North West FRS, the other FRS control rooms which took calls from or about Grenfell Tower (Kent, Surrey, Essex and Merseyside) had no formal reciprocal agreements or arrangements with the LFB. Those control rooms were contacted on an ad hoc basis either by BT or by family members who were living in the area covered by those fire and rescue services.
- 29.134 Essex FRS was the first to be contacted by BT at around 01.30. By 01.47, Kent FRS had also been contacted by BT. Both had been asked if they could take calls because there were too many for the LFB and its fallback services to answer. In both instances, the control rooms were given next to no information by BT about the incident. That caused CRO Katrina Marshall in the Essex FRS to ask BT more about the incident, but BT gave her little by way of information and no help about what advice to give callers. Kent FRS was able to obtain information from CRO Howson in the LFB control room in a call at 01.47.13, but Essex FRS was not able to speak with the LFB control room and experienced difficulty in obtaining information about the incident.
- 29.135 The CROs in the Essex FRS control room made continual efforts to get in touch with the LFB control room using the admin line and the emergency line and through GM Nigel Dilley, the Essex FRS NILO. Eventually, CRO Sharon Lancaster resorted to searching for information about Grenfell Tower on the internet at around 02.14. In the meantime, Essex FRS had taken calls from trapped residents (at 01.48 from Nadia Choucair and at 02.13 from Natasha Elcock). In both cases the CROs were unable to provide any information to the residents about the incident or reassurance about rescue efforts; they did not provide any advice to help the callers to protect themselves.
- 29.136 OM Norman does not appear to have been specifically aware that control rooms of fire and rescue services other than North West FRS were taking calls on behalf of the LFB as she did not speak to them or set up any arrangements for them to take calls on behalf of the LFB. It is unclear why GM Dilley had such difficulty in contacting the LFB using the direct line and the dedicated Airwave channel. The consequence of these breakdowns in communications was that callers who were put through to other control rooms were not able to obtain any information about the incident or advice about what to do.
- 29.137 Furthermore, the difficulties experienced by Essex FRS meant that the information it had received from those who were calling from the tower was not passed to the LFB control room, and subsequently to the incident ground, in a timely manner. Indeed, there was a 30-minute delay between Essex FRS receiving the first FSG call from Nadia Choucair at 01.48.00 and the information reaching the LFB at 02.18.55. The failure was further compounded by the fact that when the information relating to those two calls was given to the LFB, CRO Marshall in the Essex FRS control room did not include the flat number given by Nadia Choucair because

²³⁷ CRO Jabin put the timing of that at between 02.30 and 03.00: Day 43/89/14.

²³⁸ Jabin Day 43/89/18-90/14.

it had not been recorded on the Essex FRS incident log and she had not taken the original call. Nadia Choucair did not make any further calls to the LFB until 02.37, so the LFB control room and the incident ground remained ignorant of the location of her flat for around 46 minutes.²³⁹

- 29.138 When the “stay put” advice was revoked at around 02.35, LFB CROs informed the other fire and rescue services and by approximately 03.09 at the latest all those taking calls on behalf of the LFB had become aware of the change in advice.²⁴⁰ However, the need to advise people in forceful and blunt terms to leave the building does not always appear to have been fully understood by the CROs of the other fire and rescue services (apart from North West FRS). For example:
- a. At 02.56, CRO White of Essex FRS spoke to Paulos Tekle and advised him to leave, but when Paulos Tekle told him that the lobby was full of smoke, CRO White advised him to block out the smoke rather than leave at all costs.
 - b. At 02.57.32, CRO Mitch Samson of Kent FRS spoke to Ann Chance for over 90 minutes while her brother, who was in the same flat, was on the phone to the LFB. During the course of the call, a colleague of CRO Samson in Kent FRS was told that the LFB had changed its advice. Although CRO Samson did tell Ann Chance to follow the advice being given by the LFB to her brother, he continued to reassure her that crews would be coming to her assistance.
- 29.139 Undoubtedly, it was difficult for other control rooms to know exactly what advice CROs in the LFB control room were giving callers, but given that they were acting on its behalf, it was important for the LFB to ensure that they knew the severity of the situation and what advice to give callers.

The role of BT

- 29.140 It would be normal practice in spate conditions for the LFB control room to establish critical contact arrangements with BT, in accordance with paragraph 3.10 of PN539. SOM Smith kept in contact with BT via the “red phone” during the night of the fire and BT routinely told her to which control rooms they were directing Grenfell calls.²⁴¹ BT passed calls to three neighbouring fire and rescue services control rooms: Surrey, Essex and Kent. At some point SOM Smith asked BT to stop directing calls to North West FRS because she thought that they were overrun.²⁴²
- 29.141 The communication between the LFB and BT would not normally extend to giving BT detailed information about the incident, although BT would often be able to discern from callers something of its nature.²⁴³ BT would not normally handle calls itself and would not give advice to callers or take information from them, but on the night of the Grenfell Tower fire, its operators did in some cases provide advice to callers.²⁴⁴
- 29.142 OM Norman told BT operators what to say to callers before the “stay put” advice changed, but she did not keep in contact with BT during the night to give its operators the latest information about the incident or to obtain information from them about the calls that had

²³⁹ Naomi Li, who moved to the flat of Nadia Choucair during the fire, had made a call at 01.30.38 to report that she was in her neighbour’s flat but she did not provide the flat number, only the floor number: [LFB00000311]; [INQ00000472].

²⁴⁰ North West FRS were told at 03.04; Essex FRS at 02.40.00 (by GM Dilley), 02.52.51 (by CRO Adams) and 03.14.23 (by Surrey FRS); Surrey FRS at 03.06.08 (by SOM Smith); Kent FRS at 02.59.04 (by CRO Gotts) and again at 03.09.03 (by Surrey FRS); Merseyside FRS at 02.47.37 (by CRO Jones).

²⁴¹ Smith Day 21/63/7-10, 112/16-25. This must have been after her arrival at around 02.15.

²⁴² Smith Day 21/112/21-23.

²⁴³ Smith Day 21/113/23-115/8.

²⁴⁴ Smith Day 21/111/9-24.

been taken.²⁴⁵ SOM Smith had no discussion with BT about what advice their operators should give to callers, although after the “stay put” advice had been revoked she did tell BT that people calling from within the tower were now being told to leave.²⁴⁶

- 29.143 After the event, some concern was expressed within the LFB that BT had not known what advice to give callers,²⁴⁷ but SOM Smith could not recall having had any concerns about that. It is right to say, however, that neither she nor OM Norman had spoken to BT to find out how calls were being handled, nor had they discussed with BT the substance of any calls.²⁴⁸ In any cases where BT may have taken information from callers it remains unclear whether, and if so how, that information was transmitted to the LFB control room.

9 Advice given to callers by other emergency services

- 29.144 The LAS and MPS control rooms also handled a number of calls from occupants of the tower, but there was a lack of co-ordination between the three emergency services, particularly in the area of communication between control rooms and in relation to the advice to be given to callers trapped in the tower.
- 29.145 Unfortunately, the LFB did not in general communicate efficiently with the other emergency services. That may be because it does not share an established communications link with the MPS or the LAS, which themselves share a CAD link,²⁴⁹ or because there was no joint Airwave channel, as required by paragraphs 4.1.2 and 8.10.2 of the LESLP Major Incident Manual.²⁵⁰

The MPS

- 29.146 The MPS control centre (MetCC) took 13 emergency calls in the course of which an operator gave advice to callers.²⁵¹ As is evident from the transcripts, the advice given by the operators varied widely; it included both unequivocal advice to get out of the building²⁵² and advice to leave if the caller wished.²⁵³ In some cases the caller was put through to the LFB control room for advice.²⁵⁴ According to Chief Inspector Graham Winch, that was in accordance with their training and the guidance given to MetCC operators and dispatchers to use their common sense and to involve the LFB if specialist advice is needed.²⁵⁵
- 29.147 Beyond that generic guidance, MetCC operators did not understand the “stay put” concept and were not trained in giving fire survival guidance.²⁵⁶ They were not trained to confirm with the LFB what advice the control room was giving callers and disseminate that information to all police operators dealing with calls,²⁵⁷ and there was no statement of practice within the MPS to that effect.²⁵⁸

²⁴⁵ [MET000080589] p. 5 and Norman Day 42/122/24-124/19.

²⁴⁶ Smith Day 21/113/1-8.

²⁴⁷ Control Room Debrief notes [LFB00003113] p. 4 and [LFB00003119] p. 2.

²⁴⁸ Smith Day 21/112/11-25; Norman Day 42/124/12-16.

²⁴⁹ Winch witness statement [METS00020664] pp. 5-6.

²⁵⁰ [RBK00013294] pp. 13, 28.

²⁵¹ NAJ/2 MET00023291. For individual calls, refer to: CAD 533 [INQ00000282]; CAD 542 [INQ00000264]; CAD 543 [INQ00000270]; CAD 578 [INQ00000280]; CAD 611 [INQ00000287]; CAD 801 [INQ00000284]; CAD 823 [INQ00000276]; CAD 828 [INQ00000266]; CAD 867 [INQ00000470]; CAD 932 [INQ00000281]; CAD 980 [INQ00000275]; CAD 1093 [INQ00000293]; CAD 1104 [INQ00000291].

²⁵² CAD 533 [INQ00000282].

²⁵³ CAD 611 [INQ00000287].

²⁵⁴ CAD 578 [INQ00000280].

²⁵⁵ Winch witness statement [METS00020664] p. 10.

²⁵⁶ Winch witness statement [METS00020664] p. 9.

²⁵⁷ Winch witness statement [METS00020664] pp. 8-9.

²⁵⁸ Winch witness statement [METS00020664] p. 10.

- 29.148 Commander Neil Jerome said that although it would be common for MetCC to receive “fire calls about tower blocks”, it would be rare for an operator to give advice to callers.²⁵⁹ Indeed, Inspector Nicholas Thatcher was unaware what the acronym “FSG” stood for.²⁶⁰ Some of the advice given by MetCC operators was inexplicable, such as the advice to Zainab Deen during the call made at 02.01.40 to wave at the police helicopter.²⁶¹
- 29.149 Despite separate declarations of a Major Incident by the MPS and the LFB, there is no evidence that the LFB contacted the MPS or the LAS control rooms at any time to tell them what advice to give callers or how to advise callers once the “stay put” advice had changed.
- 29.150 Commander Jerome was unable to explain why, on his evidence, MetCC was still giving “stay put” advice as late as 03.05.²⁶² It was not until 03.08.27 that MetCC broadcast that change over the general MPS radio channel.²⁶³ The message was repeated at 03.10.56, and then again with emphasis at 03.58.03,²⁶⁴ and it is telling that the two MPS officers in charge at the incident, Detective Superintendent Paul Warnett and Inspector Thatcher, did not appreciate that the advice had changed until 03.58. Even though the LFB was in contact with MetCC, for example, to tell it that the LFB had declared a Major Incident,²⁶⁵ there is no clear evidence of how the messages that the “stay put” advice had been revoked were relayed by the LFB to the MetCC control room.²⁶⁶ It is possible that the message was sent by an officer at the scene who had in some way picked it up from the LFB.²⁶⁷
- 29.151 One of the consequences of the declaration of a Major Incident by the emergency services is that there should be a conversation as soon as possible between the supervisors of all the relevant control rooms. That is one of the joint operating requirements established under the Joint Doctrine Interoperability Framework agreed under JESIP.²⁶⁸ I return to the topic in Chapter 30.
- 29.152 That is not to say that there was no communication at all between MetCC and the LFB control room. There are sporadic examples of contact, such as the call between the MPS and the LFB at 01.46.18, in which the MPS operator asked CRO Adams whether there was any advice they could give callers, as there was a distressed caller stuck on floor 16 (Sener Macit).²⁶⁹ The MetCC operator then set up a conference call in the course of which CRO Adams gave “stay put” advice. The MetCC operator remained on the line and took the call back at its conclusion. MetCC also called GM Dilley, the Essex FRS NILO at 02.26.30 and 02.32.31 to pass on information, including the fact that the advice to callers had changed. However, the impetus for that is likely to have come from a decision made unilaterally by an MPS supervisor rather than from the LFB.²⁷⁰
- 29.153 In addition to MetCC operators, MPS officers on the incident ground also gave advice to callers from the building. The MPS’s principal role on the night of the fire was to keep order outside the building and in the surrounding area in order to ensure a safe and unimpeded

²⁵⁹ Jerome Day 72/15/7-14

²⁶⁰ Thatcher Day 71(Mon)/113/3-4.

²⁶¹ [INQ00000270]. Commander Jerome was unable to explain that advice: Jerome Day 71(Mon)/207/12-15.

²⁶² Jerome Day 71(Mon)/213/11-25, 72/17/17-18/8. This was by reference to his own exhibit NAI/2 [MET00023291] and CAD 932 [INQ00000281]. Although the transcript of that call does not actually record “stay put” advice being given, equally the operator did not advise the caller to leave at all costs.

²⁶³ CAD 482 [MET00023294] p. 20.

²⁶⁴ CAD 482 [MET00023294] pp. 21, 28.

²⁶⁵ AOM Real called the LAS at 02.37.26 [INQ00000376] and the MPS at 02.38.06 [INQ00000375].

²⁶⁶ Jerome Day 71(Mon)/211/19-25; Winch witness statement [METS00020664] p. 8; Woodrow Day 72/135/16-19.

²⁶⁷ That was Chief Inspector Winch’s view: [METS00020664] p. 8.

²⁶⁸ Joint Emergency Services Interoperability Principles, 2nd Edition, 2 July 2016 [MET00023290].

²⁶⁹ [LFB00000326].

²⁷⁰ Winch witness statement [METS00020664] p. 9. That would be consistent with the MetCC’s uneven approach to advice to callers.

operating environment for the LFB and the LAS that was large enough for their purposes.²⁷¹ Many of the officers were asked by families of those trapped in the building what advice to give them or were handed mobile phones and asked to speak to them directly. The Inquiry received some 35 witness statements from police officers who had attended the incident and gave evidence about communications they had had with callers or their family members, or about similar communications with their fellow police officers.²⁷² The overall picture derived from that evidence is that the advice they had given was a mixture of stay put and evacuation, in accordance with what each officer thought the LFB position was at the relevant time. Many of the officers recall the LFB advice changing at some point during the night and some of them said that they had heard it over the MPS radio.²⁷³ Understandably, none of the police officers were able to put a precise, or even reasonably accurate, time on those conversations; nor was any of them able to put a time on the change of advice.

- 29.154 Finally, unlike the LFB, MetCC did not appear to operate a policy of not calling callers back. For example,²⁷⁴ on CAD 578 (a call at 02.01.40) MetCC called back Zainab Deen.²⁷⁵

The LAS

- 29.155 As of 14 June 2017 there was no formal policy within the LAS requiring call-handlers to pass on information from 999 calls to the LFB, but ordinarily that should have been done.²⁷⁶ The LAS was not expecting to receive calls from within the tower,²⁷⁷ but, when they handled calls themselves, they were trained to go through triage protocols.²⁷⁸ Within the triage protocol, there is a “critical danger” prompt which is a scripted message.²⁷⁹ Call-handlers are not allowed to go off script and should have gone through the protocols before passing information on to the LFB if needed.²⁸⁰ It was not possible to transfer a call directly to the LFB.²⁸¹
- 29.156 As at 14 June 2017 the LAS provided no training to their call-handlers on giving FSG advice or indeed any guidance outside that which was scripted.²⁸² It is therefore unsurprising that those who took the calls gave no FSG advice. They had received no guidance from the LFB about how to advise callers from the building because the LFB had assumed that they would be handling the calls themselves.²⁸³ Moreover, there is no evidence that the LAS had been told of the change to the “stay put” advice by the time it received the three calls mentioned below. The evidence suggests that the LAS control room was not formally told of the change in the “stay put” advice, although Laurence Ioannou, the LAS senior officer for the incident,²⁸⁴ was informed of it at the scene.

²⁷¹ Warnett witness statement [MET00008065] p. 3; Jerome witness statement [MET00023286] paragraph 26.

²⁷² These are listed, and the key segments of evidence quoted, in Jerome witness statement exhibit NAI/3 [MET00023285].

²⁷³ For example, PC Kiran Sangha [MET00007837] p. 5; PC David Heffernon [MET00007832] p. 2.

²⁷⁴ These call times are those recorded on the relevant CAD file.

²⁷⁵ [INQ00000270].

²⁷⁶ Woodrow Day 72/117/13-25.

²⁷⁷ Woodrow Day 72/124/24-125/3.

²⁷⁸ Woodrow Day 72/125/19-126/17.

²⁷⁹ Woodrow Day 72/127/15-128/2.

²⁸⁰ Woodrow Day 72/126/11-127/4, 130/10-133/4.

²⁸¹ Woodrow Day 72/126/11-12.

²⁸² Woodrow Day 72/127/5-128/2.

²⁸³ Woodhouse witness statement [MET00015657] p. 2.

²⁸⁴ Incident Response Officer (or IRO), in LAS terminology.

29.157 The LAS handled 28 emergency calls relating to the fire at Grenfell Tower, of which three calls were from flats within the tower itself.²⁸⁵ The details of those three calls are as follows:

- a. At 02.39.09 Elizabeth Woodhouse received a call from a woman²⁸⁶ in Flat 186 on floor 21 reporting five persons in the flat.²⁸⁷ She overheard a man shouting that they were dying. She told them that the emergency services were there, that they would be rescued and that she should be reassured that help was coming. She did not know what further advice to give and put the call on hold while she consulted her supervising officer. The line then went dead, but contrary to LAS protocol she did not call the caller back and complete the call.²⁸⁸
- b. At 03.00.55 the LAS control room received another call from inside the tower.²⁸⁹ The caller reported that he was on floor 15 and was stuck in the flat alone.²⁹⁰ He said there was smoke but that he could see no flames. The call was triaged under the LAS protocols. The call-handler told him that there were a lot of firefighters there and that they were trying to get people to him. The call-handler remained on the line until the line was disconnected at approximately 03:05 before further instructions could be provided. The call-handler provided reassurance throughout the call and asked if the caller was by the window. There is no record of any attempt by the call-handler to call back.
- c. At 03:18.43, Gayna Morris, an LAS control room operator, received a call from the same person on floor 15.²⁹¹ He asked for an update and said that he could not breathe. The call-handler said that the LFB would try to help him. The call was triaged through LAS's *Protocol 6 – Breathing Problems*. Gayna Morris placed the caller on hold and spoke to her supervisor, but the call was disconnected before any further instructions had been given. She tried to ring back. She got through to his voicemail, but did not leave a message.

29.158 Nobody in the control room informed the LAS of the decision to revoke the “stay put” advice and consequently the new advice to leave the building at all costs was not communicated to those callers. AOM Real’s call to the LAS control room at 02.37.26 was probably the most opportune time at which to tell the LAS that the LFB’s advice to callers had changed. If she had done so, the LAS operators would have advised those callers to leave the building.

10 Communications within the control room and between the control room and the incident ground

Lines of communication on the night of the Grenfell Tower fire

29.159 The scale of the Grenfell Tower fire and the speed at which it developed meant more emergency calls came in than the established systems could handle effectively. As a result, the manner in which information was communicated, both within the control room itself and between the control room and the incident ground, was to a large extent improvised.

²⁸⁵ The full list of such calls, their times and CAD references and other details is set out at Table 1 to the witness statement of Paul Woodrow [LAS00000009].

²⁸⁶ Possibly Helen Gebremeskel, who moved with her daughter to Flat 183 and escaped with the Gomes family at 03.38.06.

²⁸⁷ CAD 392 [INQ00000383] p. 4.

²⁸⁸ Woodhouse witness statement [MET00015657] p. 3.

²⁸⁹ CAD 448 [INQ00000384].

²⁹⁰ It can be deduced from the earlier exit times of the other occupants of floor 15 present on the night of the fire that the only occupants still on floor 15 at the time of this call were Steven Power (Flat 122), who perished in his flat, and Christos Fairbairn (Flat 124), who left the tower at 03.55.02. The call is likely to be from Christos Fairbairn.

²⁹¹ CAD 486 [INQ00000385], and Gayna Morris witness statement [MET00016785] p. 2.

It is appropriate to look first at how information obtained from callers was transmitted from the CRO by whom it was received to the incident ground, and secondly at how, if at all, information was communicated from the incident ground to the control room.

Information transmitted from the control room to the incident ground

The chain of communication

29.160 The steps by which information travelled from CROs through the control room and then on to the command unit at the incident ground were, in summary, as follows:²⁹²

- a. The CRO taking the call recorded certain details in the incident log on the VISION system by creating a “service request”, which would then be completed by the radio operator (CRO Darby) sending a radio message to the command unit.
- b. Before SM Oliff began using whiteboards the information was passed either:
 - i. by OM Norman or CRO Adams on the admin line to CU8,²⁹³ or
 - ii. by CRO Darby by radio, originally to pump G261, then to CU8 and finally to CU7, thereby completing the service request relating to that call.
- c. Once the use of whiteboards to record FSG information had been introduced, CROs recorded FSG information on scraps of paper, which were either collected by a senior officer (such as SOM Smith)²⁹⁴ and taken to SM Oliff or were taken by CROs themselves. Having recorded the information he had received on one of the whiteboards, SM Oliff transmitted it to the command unit using his brigade mobile telephone.
- d. However, even after mobile telephone communication with the command unit had been established, CROs also made service requests on the VISION system, to which CRO Darby would respond by sending the information by radio.²⁹⁵ An example is the service request created by CRO Fox at 02.24.11²⁹⁶ for Flat 183 on floor 21,²⁹⁷ which was completed by CRO Darby at 02.25.32²⁹⁸ when she sent the message by radio to the command unit (by then CU7). SM Oliff also added Flat 183 to the right-hand whiteboard at some point,²⁹⁹ although exactly when is not known.
- e. The information on the whiteboard was changed by SM Oliff or one of the senior officers (including SOM Smith³⁰⁰) to reflect the information derived from FSG calls.
- f. According to SM Oliff’s mobile telephone records,³⁰¹ his first call to the command unit (probably still CU8 at that stage) was at 02.06 and lasted some 15 minutes. There were then shorter calls to the command unit (probably by then CU7) at 02.23 (2 mins 40 secs), 02.33 (8 mins 44 secs), 02.44 (1 hr 35 mins 12 secs) and 04.34 (9 mins). Thereafter, the calls became shorter and increasingly sporadic.

²⁹² Smith Day 22/41/12-55/25.

²⁹³ CU8 arrived on scene at 01.30.48 and CU7 at 01.42.04 (SIL p. 8).

²⁹⁴ Also FFs Scott Hayward and Adam Crinion, once they had arrived.

²⁹⁵ Darby Day 34/7/21-9/1.

²⁹⁶ SIL p. 22.

²⁹⁷ The Gomes’s flat.

²⁹⁸ SIL p. 22.

²⁹⁹ [MET00016906] p. 3.

³⁰⁰ She wrote “10 people” next to Flat 193: Smith Day 22/87/10.

³⁰¹ [MET00016910].

- g. In the command unit, FSG information was written down both by the officer in mobile phone contact with SM Oliff (in the early stages WM Meyrick) and by the radio operator (WM Antony Peckham), probably using a pad of control information forms.³⁰² After GM Thomas Goodall had taken over responsibility for the management of FSG information on the incident ground at around 02.20³⁰³ he and WM Norman Harrison began to collate the details of FSG calls on a whiteboard in CU7.³⁰⁴ The information was then despatched to the tower either by runner or fireground radio contact, as described earlier.

Defects in the chain of communications

29.161 The improvised nature of the communications between the control room and the incident ground makes it unsurprising that the system as it developed over the night had deficiencies. The most obvious were as follows.

- a. There were at any one time at least two (and at times three) lines of communication between the control room and the incident ground:
 - i. Between 01.30 and 02.06, FSG information was sent to the incident ground both by radio and by means of the admin line.
 - ii. Between 02.06 (when SM Oliff began to communicate by mobile telephone with CU8) and 02.58 there were three separate lines of communication: radio, the admin line and mobile telephone.
 - iii. Notwithstanding that SM Oliff was passing FSG information by mobile telephone to the command unit, CRO Darby continued to send service requests by radio until at least 03.10.³⁰⁵ There was therefore a period of over an hour during which there were two simultaneous channels by which FSG information was being sent to the command unit.³⁰⁶ The entry in the Control Room Debrief³⁰⁷ to the effect that all FSG information was sent by SM Oliff's mobile telephone and in "no other way" is wrong, as CRO Darby told the Inquiry.³⁰⁸
 - iv. At the same time (i.e. after 02.06) the control room was also passing messages to CU7 by the admin line.
- b. There was no system of collating the information sent by different routes in order to ensure that there was no inconsistency or duplication.³⁰⁹ Although the whiteboards that were set up in the control room at around 02.30 were the first attempt systematically to collate the information, the system was not helped by the fact that SM Oliff did not know that when he was sending FSG information by mobile telephone, CRO Darby was also sending FSG information by radio to a different officer.³¹⁰
- c. SM Oliff was not able to see the incident log showing service requests and completions and therefore did not know what information had been sent to the command unit by

³⁰² Peckham Day 30/161/3-23.

³⁰³ For example, Goodall Day 35/28/1-17.

³⁰⁴ A photograph of the whiteboard taken at 02.59.58: [MET00015930].

³⁰⁵ 03.10.51 was the last time recorded on the SIL at which an FSG was marked as completed and therefore passed by radio to the incident ground. WM Peckham could not explain why that was since he was receiving radio messages in the radio operator's chair on CU7 all night until at least daybreak: Day 30/173/6-25.

³⁰⁶ SIL p. 24 and Darby Day 34/13/18-14/11.

³⁰⁷ [LFB00003113] p. 4

³⁰⁸ Darby Day 34/17/13-18/2.

³⁰⁹ Darby Day 34/14/12-18.

³¹⁰ Darby Day 34/14/12-15/1.

radio.³¹¹ He was therefore unable to compare the information he had received on paper with service requests being created by CROs to avoid duplication and avoid mistakes. However, the incident log was not an easily navigable source of information and even if he had had access to it, he would not have been able to check whether any particular information had already been sent by radio. But the point remains that he was left in ignorance of the substance of the parallel radio communications with the command unit.

- d. The rather primitive system of transferring information by scraps of paper was reliant on individual CROs making accurate notes of what they had been told while answering calls and operating the incident log. The accuracy of the information which SM Oliff passed to the incident ground depended on the care taken by CROs when writing it down.
- e. For one reason or another FSG information was not always recorded fully or accurately on the whiteboards. The following are examples of different kinds of recording error:
 - i. At 02.42.40, CRO Duddy took a call from Alemishet Demissie who was trapped in Flat 94 on floor 12. The details of the call were not recorded on the whiteboard at all.
 - ii. At 02.46.42, CRO Jones took a call from Merseyside FRS who had received a message about Abdeslem Sebbar who was trapped in Flat 81 on floor 11. The details of the call were not recorded on the whiteboard.
 - iii. At 01.54.14, CRO Duddy started a 40-minute call with Roy Smith in Flat 95 who reported that he was trapped with his wife and two children. The message on the whiteboard about his flat read (incorrectly): “95 – 12th flr – 1 male, 1 child”.
 - iv. Calls about Anthony Disson’s flat, Flat 194 on floor 22, received by the LFB between 02.49 and 03.10 reported a change in conditions from heavy smoke to flames at his door. The whiteboard entry was as follows: “194 – 22 flr – heavy smoke. 1 adult”. It was not changed to reflect the deteriorating conditions.

29.162 The overall consequence of these various deficiencies was that in many cases the incident ground was given duplicate or incomplete information.³¹² However, the evidence as it stands does not make it possible to say whether that contributed to any death.

Information transmitted from the incident ground to the control room

29.163 Despite the requirement in paragraph 9.1 of PN790 that the control room be kept informed of the action taken to resolve every FSG call, in practice the control room rarely received information from the incident ground about such matters. SOM Smith said that in her experience the control room did not normally have much contact with the incident ground in relation to FSG calls and that it would learn of a rescue when the CRO taking the call heard firefighters in the background or the caller told the CRO that the firefighters had arrived.³¹³

29.164 Similarly, despite the requirement in paragraph 9.3 of PN790 that the outcome of every FSG be communicated to control, SOM Smith said at one point in her evidence that she “had never experienced that happening”.³¹⁴ The same applies in relation to paragraph 9.2, which requires

³¹¹ Smith Day 22/71/9-23, 49/3-10, 50/3-6. In fact, SM Oliff could have been logged on to the incident log, but it would have taken him time to familiarise himself with what was on it and how it worked, and it would not have eliminated the risk of incompleteness: Smith Day 22/72/23-73/11.

³¹² Smith Day 22/71/25-72/19. Examples are CRO Adams’s admin line call at 02.00.34 [INQ00000195] and CRO Darby’s radio message at 01.59.05 [LFB00002786].

³¹³ Smith Day 21/185/18-186/15.

³¹⁴ Smith Day 21/188/18-23.

that informative messages must contain an update on each specific FSG call. SOM Smith said that she had never personally experienced any of the requirements of paragraphs 9.1, 9.2 or 9.3 being followed in practice.³¹⁵ Later in her evidence, however, she said that she would ordinarily expect that on a smaller-scale incident information would be sent to the control room from the incident ground about the progress of an FSG call if the call had been prolonged and the firefighters were having trouble reaching the floor in question.³¹⁶ Viewed overall, my understanding of her evidence is that, although she had no personal experience of information about the response to an FSG call being sent from the incident ground to the control room, she would expect that to be done in less demanding circumstances, if firefighters were significantly delayed in reaching the caller.

- 29.165 PN790 was introduced specifically in response to the experiences of the LFB at the Lakanal House fire and the conclusions in the LFB Lakanal Report. It is founded on the principle expressed on page 18 of GRA 3.2 that as part of FSG arrangements “information will be exchanged between callers, Fire Control and commanders at the incident”. It is hard to understand why, having gone to the trouble of formulating and introducing PN790, LFB’s officers then routinely failed to follow it. The need for clear lines of communication between the incident ground and the control room is obvious and of vital importance, especially if there is to be a change in the advice given to callers. As SOM Smith accepted, since the incident commander is responsible for decisions affecting the advice given to people trapped in a burning building (including, if appropriate, a decision to abandon the “stay put” advice), it is necessary for them to be in active communication with the control room to enable proper advice to be given to callers.³¹⁷ It is a serious criticism, therefore, that the LFB habitually failed to ensure that the control room was informed about the progress of responses to FSG calls, which was one of the fundamental tenets of PN790.
- 29.166 On the night of the Grenfell Tower fire no information of that kind, nor indeed any information about conditions within the building more generally, was transmitted from the incident ground to the control room, despite there having been regular communication throughout the incident between the control room and the command unit dealing with FSG calls by radio, the admin line³¹⁸ and mobile telephone. It is a remarkable fact that none of the first three incident commanders (WM Michael Dowden, SM Andrew Walton or DAC Andrew O’Loughlin) made any attempt to contact the control room, either directly or indirectly, to provide information about conditions at the incident ground and the progress of operations. As a result, it was not possible for the control room to give callers reliable advice about the progress of the firefighters through the building. It is fair to say, however, that senior managers in the control room did not attempt to obtain information of that kind from the incident ground, despite the fact that it was a clear policy requirement to do so³¹⁹ and despite the various lines of communication which had been established with the command units.
- 29.167 As a result, CROs received no information at all about the development of the fire other than that which could be gathered from the formulaic and brief informative messages sent sporadically by the incident commander.³²⁰ Those messages told CROs nothing of any value about the conditions within the building, in particular in the lobbies or stairs, the spread of

³¹⁵ Smith Day 21/188/25-189/4.

³¹⁶ Smith Day 22/27/2-23.

³¹⁷ Smith Day 22/28/19-29/5.

³¹⁸ For example, OM Norman’s call with CU8 at 01.47.44 [INQ00000208].

³¹⁹ PN790 paragraphs 9.1, 9.2 and 9.3.

³²⁰ There were three within the first two hours following the first call at 00.54.29, namely at 01.16.02, 02.04.20 and 02.42.03.

fire on the exterior of the building or the progress of firefighters in reaching residents or tackling the fire. They were therefore given nothing that would have enabled them to give more timely and focused advice to callers.

11 Deficiencies in the supervision of the control room

29.168 The recommendations of the LFB Lakanal House report included a recommendation that there should be a review of Fire Survival Guidance training for supervisors. A new course for supervisors focusing on leadership and the general supervisory role within the control room, which included the management of FSG calls, was said to have been introduced in response.³²¹

29.169 However, the evidence of SOM Smith, OM Norman and AOM Real suggested that they had not received any specific training on the role of a supervisor, particularly in relation to FSG calls. SOM Smith said that she had not received any specific training from the LFB on the role of a senior operations manager; she had received training on the role of a supervisor only in 2005 when she had been working for Essex FRS.³²² OM Norman described receiving only “on-the-job training” and “experiential” training but no formal training for the role of operations manager. She said that she had been trained on PN539 when she joined the LFB in 2003 and had since developed her own additional training on that policy.³²³ She had never received any formal training on PN790 (although she was aware of it), but had undergone a big FSG training session in 2011 or 2012.³²⁴ She received the same FSG training as the CROs and did not have any additional training for her role as an operations manager.³²⁵ She said she had never received any training in how to handle many FSG calls at the same time or in how to manage a control room dealing with a large incident of 10 pumps or more.³²⁶ AOM Real also described the training she received as “on-the-job” training. She also said she had not received any training on how to manage a control room handling numerous FSG calls.³²⁷

29.170 I have already said that on the night of the Grenfell Tower fire the supervisors, like the CROs, faced an unprecedented and extremely difficult situation in which the control room was quickly overwhelmed by the number of emergency calls it received. I make every allowance for the fact that AOMs May and Real were also absorbed in management tasks such as requesting additional resources to be sent to the incident, despatching senior officers, liaising with other control rooms and agencies and maintaining fire cover across the rest of London. Nonetheless, despite all the difficulties, there were certain respects in which the supervisors failed to manage the control room adequately and perform the functions required of them by PN790. In particular:

- a. The supervisors generally, but OM Norman in particular, failed to seek information from the incident ground about the progress of operations, the development of the fire and the actions being taken to resolve FSG calls. Although the incident commander had a duty to keep the control room informed of those matters, OM Norman, as the senior member of the team, ought to have asked the command unit to obtain that information to assist the CROs in providing advice to callers. The LFB Lakanal Report concluded that during the Lakanal House fire, control supervisors “regularly tried to obtain information about the progress with the incident particularly in relation to callers being given FSG”.³²⁸ That

³²¹ LFB Lakanal Report [HOM00001124] pp. 52-53.

³²² Smith Day 21/8/23-9/19.

³²³ Norman Day 42/12/13-22.

³²⁴ Norman Day 42/12/13-13/8.

³²⁵ Norman Day 42/13/1-16.

³²⁶ Norman Day 42/13/17-14/6.

³²⁷ Real Day 43/3/15-22.

³²⁸ LFB Lakanal Report [HOM00001124] paragraph 319.

did not happen on the night of the Grenfell Tower fire, despite the fact that at an early stage in the incident OM Norman had set up a direct telephone link with WM Meyrick by way of the admin line call and spoke to him on two occasions (at 01.35.34 and 01.47.44). Proper supervision would have involved ensuring that the officers in the command units were regularly pressed for information about the resolution of FSG calls relating to specific flats.

- b. Because of the increasing flow of FSG calls to the control room after 01.30, OM Norman became involved in taking 999 calls. That was understandable, but undermined her ability to maintain managerial supervision. When the flow of FSG calls became a flood between around 01.30 and 01.40, OM Norman should have stood back and decided how to manage the collation and transmission of FSG information to the incident ground in a way that ensured that clear lines of communication were established between the control room and the command unit.
- c. OM Norman failed to ensure that CROs obtained from callers all the information required by PN539 and PN790. Sometimes that was not possible because callers abandoned the line, but there were instances in which CROs simply did not ask all the questions required by the policies. OM Norman said that she expected CROs to obtain all the relevant information and did not think it necessary to remind them or chase them for more.³²⁹ In the ordinary way that might not be an unreasonable attitude to take, but given the volume of calls, the fact that CROs were terminating FSG calls to take new calls and the fact that the information being passed to the incident ground was not complete, OM Norman ought to have realised that in some cases CROs were not obtaining all the necessary information and should have reminded them of the need to do so, even on the briefest of calls.

29.171 After the “stay put” advice had been revoked, the supervisors provided little or no supervision or assistance to the CROs in giving effect to the change. That was partly because they were extremely busy managing the incident and partly because the number of calls being received made it impossible for them to supervise them individually. However, in some cases it was, or should have been, apparent that CROs had not understood clearly enough the need to advise occupants in direct and forceful terms to leave the building immediately and not wait to be rescued. It was the responsibility of the supervising officer to listen to the tenor of the conversations between CROs and callers to ensure that unwelcome advice was being given clearly and unequivocally. Without adequate support and supervision, the CROs, who were faced with handling some very difficult calls, were left to do their best. Unfortunately, in some instances they failed to give the necessary advice in the right way.

29.172 The underlying reasons for these failures of supervision are not entirely clear, but on the basis of the evidence given by control room staff of all levels of seniority, it seems at least possible that they were attributable to a failure on the part of the LFB to provide its senior control room staff with appropriate training on how to manage a significant incident with a large number of FSG calls.

³²⁹ Norman Day 42/79/17-80/2.

Chapter 30

The Response of the MPS, the LAS, RBKC and TMO

This Chapter examines the joint working arrangements in place for emergency services in London and the response of the emergency services other than the LFB on the night of the Grenfell Tower fire. It examines in particular how and the extent to which they communicated and co-operated with the LFB and with each other.

It also examines the responses of RBKC and the TMO on the night of the fire.

1 Introduction

- 30.1 The Inquiry received witness statements from officers of the MPS who attended the incident on the night of the fire, from National Police Air Service (NPAS) pilots and from other personnel. They included statements from two senior police officers, Chief Inspector Graham Winch,¹ who explained certain aspects of the MPS's communications and call-handling systems, and Detective Superintendent Paul Warnett, who was the MPS Gold Commander at the scene until around 04.20.² The Inquiry also received written and oral evidence from two senior officers, namely Inspector Nicholas Thatcher³ and Commander Neil Jerome.⁴
- 30.2 The Inquiry also received written evidence from officers of the LAS who attended the fire, including a statement from Laurence Ioannou, the LAS senior officer at the scene,⁵ as well as written and oral evidence from Paul Woodrow, the LAS's Director of Operations.⁶
- 30.3 Of particular value have been the main CADs for both the MPS (CAD 482) and the LAS (CAD 247).⁷ Although they do not record all the transmissions during the night, they are the principal communications logs for the two services relating to the incident. The Inquiry has proceeded so far on the basis that the contents of CAD 482 are a reasonably reliable record of the relevant MPS communications on the night of the fire. However, in the light of further potentially relevant evidence received very recently, I am not entirely confident that the record of relevant MPS communications is complete.
- 30.4 The Inquiry received written witness statements from employees of RBKC and both written and oral evidence from Nickolas Layton and Michael Rumble, the Local Authority Liaison Officers (LALOs) at the scene up to 08.00.
- 30.5 The Inquiry also received witness statements from employees and officers of the TMO and heard oral evidence from Robert Black (Chief Executive), Teresa Brown (Director of Housing), Graham Webb (Managing Director of Repairs Direct Ltd, the company responsible for carrying out domestic repairs in properties managed by the TMO) and Hash Chamchoun (Head of Supported Housing).

¹ [METS00020664].

² [MET000080605].

³ [MET00012582]; [MET00018201]; [MET00023284].

⁴ [MET00023286].

⁵ [MET00010862].

⁶ [LAS00000009].

⁷ CADs are computer-aided dispatch logs used by the LAS and the MPS. CAD 482 [MET00023294]; CAD 247 [MET00019931].

2 The Joint Working Arrangements for the Emergency Services in London

- 30.6 The actions of the MPS, the LAS and the LFB are to be assessed against the standing arrangements in place at the time of the Grenfell Tower fire for joint operations between London's emergency services. Those arrangements are principally contained in the following three documents:
- Joint Doctrine: The Interoperability Framework (2 July 2016).⁸
 - The LESLP Major Incident Procedure Manual (July 2015).⁹
 - The London Resilience Partnership Strategic Co-ordination Protocol (February 2017).¹⁰
- 30.7 The principles set out in those documents are intended to reflect and discharge the overarching obligations placed on certain public bodies by the Civil Contingencies Act 2004 (the CCA). The LFB, MPS, LAS and RBKC are Category 1 Responders within the meaning of Part 1 of Schedule 1 to the CCA. By virtue of section 2(1) each is under a statutory duty to assess the risk of an emergency of a kind that would be likely seriously to obstruct it in the performance of its functions and to maintain and publish plans for ensuring, so far as reasonably practicable, that, if such an emergency does occur, it will be able to continue to perform its functions, mitigate the effect of the emergency and take any necessary action in relation to it without the need for additional resources, if it considers that to be necessary or desirable.
- 30.8 Section 2(3) gives the government power to make regulations about the extent of the duties imposed by section 2(1) and the manner of their performance. Regulations made under that section govern joint working, co-operation, the entry into protocols and the maintaining of plans between Category 1 Responders in what is known as a local resilience area. Under the regulations then in force in 2017 the LFEPA¹¹ had lead responsibility for maintaining emergency plans in the case of a pan-London emergency, as well as carrying out exercises and training if requested by another Category 1 Responder.
- 30.9 The legislation comprising the CCA and the regulations made thereunder is complex. Whether the three sets of arrangements to which I have referred were adequate to fulfil the statutory purposes for which they were introduced and maintained lies outside the scope of the Inquiry's Terms of Reference. What matters for present purposes is to understand the nature of those arrangements and their intended purpose in order to assess their effectiveness in relation to the Grenfell Tower fire.

Joint Doctrine: The Interoperability Framework

- 30.10 The document entitled *Joint Doctrine: The Interoperability Framework* (the Joint Doctrine)¹² was produced and maintained by those agencies responsible for Joint Emergency Services Interoperability Principles, or JESIP. JESIP is a programme run by the emergency services nationally with the support of the Home Office, the MHCLG and the Cabinet Office.¹³ The Joint Doctrine was first published in 2013 and was revised in July 2016. Its status is explained

⁸ [MET00023290].

⁹ [RBK00013294].

¹⁰ [MET00023288].

¹¹ The London Fire and Emergency Planning Authority.

¹² [MET00023290].

¹³ For a full description of JESIP refer to www.jesip.org.uk

in its section 2 as supporting the guidance entitled *Emergency Preparedness and Emergency Response and Recovery* issued by the Cabinet Office under the CCA.¹⁴ The Joint Doctrine describes itself on page 2 as

“an essential element in the hierarchy of guidance. It provides commanders, at the scene and elsewhere, with generic guidance on the actions they should take when responding to multi-agency incidents of any scale...

...

It should be embedded in individual organisation policies and procedures and in their training and exercise programmes, for all levels of response staff.”

30.11 The basic principles of joint working are set out in section 3 as “co-locate”, “communicate”, “co-ordinate”, “jointly understand risk” and “shared situational awareness”.

30.12 Section 4 deals with the early stages of a Major Incident and emphasises the importance of recognising that the incident will involve working with other emergency services or responder agencies. It points out that the sooner other responder agencies are notified of the incident the sooner joint working arrangements can be agreed and put into place.

30.13 Section 4 also sets out the principles of joint working at a Major Incident, which it defines as an event or situation with a range of serious consequences which requires special arrangements to be implemented by one or more emergency responder agencies.¹⁵ The declaration of a Major Incident triggers a pre-determined strategic and tactical response from each of the emergency services and other responder agencies. The section goes on to point out that declaring that a Major Incident is in progress as early as possible means these arrangements can be put in place as soon as possible.

30.14 To that end, the Joint Doctrine espouses a framework of common messaging or reporting called METHANE, which stands for:

Major incident
Exact location
Type of incident
Hazards
Access
Number of casualties
Emergency services.¹⁶

In section 5 of the Joint Doctrine each element of METHANE is broken down and explained. Each responder should send a METHANE message to their control room as soon as possible. The first resources to arrive at the scene should send the METHANE message so that situational awareness can be established quickly.

30.15 Section 6 of the Joint Doctrine governs control rooms and communications between emergency services, and prescribes five “supporting principles”. It explains how control rooms are the key communication links between agencies and points out that there cannot be a co-ordinated multi-agency response or effective communication if control rooms do not deliver a swift and joint approach to handling them. The first supporting principle is that a dialogue between control room supervisors must be established as soon as possible in order

¹⁴ *Emergency Preparedness and Emergency Response and Recovery*.

¹⁵ The definition is taken from the Cabinet Office’s “Lexicon of UK civil protection terminology”, at www.gov.uk/government/publications/emergency-responder-interoperability-lexicon

¹⁶ It is also possible that the incident is not yet a Major Incident, in which case the message should be ETHANE, but commanders should monitor the incident in case it exceeds the threshold.

to start sharing information about the incident. The discussions must be frequent and cover specific points, such as who is the lead agency, what information and intelligence each agency shares, what hazards and risks are known by each agency, what resources are being deployed and why, how the agencies will continue communicating with each other, and the point at which multi-agency interoperable voice communications will be required and achieved. Section 6.1.1(b) calls for the nomination of a single point of contact in each control room and the establishment of a method of communication between them all.

- 30.16 Supporting principle 5 requires the lead responder (in the case of the Grenfell Tower fire, the LFB) to suggest a location for commanders to “co-locate” in the early stages of the incident, and “if early location information is unverified” then the lead responder and other control rooms should agree an initial rendezvous point and communicate it to the commanders as soon as possible. That reflects supporting principle 4, that it is always preferable for commanders to meet and speak to each other directly.
- 30.17 The Joint Doctrine then sets out the framework for establishing “a common operating picture” (section 7), “arrangements for joint working” (section 8), a “joint decision model” (section 8.1), and under section 8.1.3 a “working strategy”, namely, an action plan that commanders develop and agree together. It sets out key steps in the establishment of an effective, integrated multi-agency operational response plan, which involves identifying hazards, carrying out a dynamic risk assessment, identifying tasks, applying risk control measures, formulating an integrated multi-agency operational response plan, and recording decisions. It then sets out further principles relating to “briefings, supporting joint decision making, information sharing and tiers of command, including operational, tactical and strategic principles, and inter-agency resources and information sharing under a multi-agency information cell (MAIC)”.
- 30.18 The Joint Doctrine is well-intentioned, but it is not an easy document to navigate or penetrate beyond the first few pages. The basic principles are clear enough, but the repetition of the same ideas in numerous different guises, and the bewildering array of management language and acronyms, often at a high level of abstraction, makes practical application something of a challenge. I hope it is not unfair to say that it bears all the hallmarks of managerial conceptualism, designed to fulfil a statutory requirement in a vacuum, and does not appear to be based on the experience of those who operate on the incident ground in the real world.
- 30.19 Two things at least are, however, plain from the Joint Doctrine. First, if an emergency service declares a Major Incident, it is essential that that fact is communicated to the other emergency services as soon as possible. That is a simple rule to follow in practice and the consequences of failing to do so would be obvious to any responder at the scene. The declaration of a Major Incident is all but useless if it is not communicated to other Category 1 Responders as soon as possible.
- 30.20 Secondly, it is vital that clear lines of communication between control rooms are established as soon as possible once a Major Incident has been declared, so that each emergency service knows what the others are doing at any given stage.

The LESLP Major Incident Procedure Manual

- 30.21 LESLP is the London Emergency Services Liaison Panel, which was formed in 1973 and consists of representatives from the MPS, the City of London Police, the British Transport Police, the LFB, the LAS and local authorities, as well as other public bodies. The LESLP Major Incident Procedure Manual (the Procedure Manual),¹⁷ version 9 of which was released in July 2015, was

¹⁷ [RBK00013294].

produced to incorporate the JESIP principles contained in the Joint Doctrine.¹⁸ As paragraph 1.8 of the Introduction to the Procedure Manual says, each emergency service has its own arrangements for responding to a Major Incident. The purpose of the Procedure Manual is to describe the agreed procedures and arrangements for the effective co-ordination of the joint efforts of those who operate within the London Resilience Strategic Co-ordination Protocol, with which it is designed to be read (and to which I will return in detail below).

30.22 The Procedure Manual is a more accessible and pragmatic document than the Joint Doctrine. The important sections for present purposes are as follows:

- a. Section 2, *Major incidents*, contains the JESIP definition of a Major Incident and goes on to explain what it typically involves, such as the large-scale combined resources of the police, the LFB and the LAS. It states that a Major Incident can be declared by one or more of the emergency services. Although what is a Major Incident to one emergency service may not be so to another, each of the emergency services will attend with the appropriate pre-determined response.
- b. Section 3, *The main functions of the emergency services and other agencies*, contains clear guidance on the role of each emergency service, the NHS and the local authority. It also creates the role of LALO (section 3.9) and provides for their functions.
- c. Section 4, *Working together*, summarises in a more digestible form the Joint Doctrine requirements, including, in particular, the requirement to communicate (including meeting face to face: section 4.1.1), to establish a Joint Emergency Service Airwave channel through MetCC (section 4.1.2) and to share information and situational awareness with partner services by use of the METHANE model of reporting (section 4.2.2).
- d. Section 5, *Scene management*, sets out how a scene will be managed by the use of cordons and access points, RVPs, marshalling areas for multi-agency resources and a forward command point.
- e. Section 8, *Communication systems*, describes the various methods of communication that the emergency services use, in particular for inter-agency command (section 8.10). Section 8.10.2 provides for all emergency services to be able to communicate on Airwave interoperability talkgroups, such as Talkgroup IC1 for tactical commanders, the ES Talkgroups for operational commanders and IAT1 for all Airwave users.
- f. Section 9, *Casualty clearance*, provides for a system of sorting casualties in order of seriousness, triage, the creation of the casualty clearing station and matters such as the involvement of the coroner and disaster victim identification. Sections 9.5, 9.6 and 9.7 contain procedures in respect of evacuees, rest centres and survivor reception centres, responsibility for which lies with the MPS supported by the local authority. Section 9.9 provides procedures for the establishment of the casualty bureau by the MPS, where details on all dead, casualties, survivors and evacuees are to be collated and where telephone enquiries from friends and relatives are to be handled. It is essential, in order to match enquiries with details of persons involved, that all casualty information be routed through the casualty bureau (section 9.9.5).
- g. Section 10, *Helicopters*, provides for helicopter assistance in the Greater London area. Section 10.1.2 sets out what equipment NPAS helicopters have on board, including a public address system (known as “skyshout”) and video transmission equipment to ground-based receiving stations, which include the MPS and LFB command vehicles

¹⁸ Presumably the 2013 version and not the July 2016 version of the Joint Doctrine, which post-dated the 2015 Procedure Manual.

and a number of police patrol supervisor vehicles. It also provides for mobile receivers which can be delivered close to the scene. Section 10.1.3 describes the ten types of support facilities that NPAS helicopters can provide. They are all assessment facilities designed to provide information and intelligence about the incident (such as casualty search and assessment of numbers), but not to carry out physical rescue of those in danger. Sections 10.2 and 10.3 provide for military helicopters and LAS HEMS (Helicopter Emergency Medical Services), principally for the mass transport of high numbers of casualties rather than rescues (although military helicopters have winch capabilities). Section 10.4 provides that HM Coastguard's search and rescue helicopters may be called upon to assist in marine or land rescue incidents in the London area.

- 30.23 The remainder of the Procedure Manual deals with investigation, safety, other assistance, media liaison and public information, occupiers' response to an incident, debriefing and the welfare of responders (sections 11 to 17).

The London Resilience Partnership Strategic Co-ordination Protocol

- 30.24 The London Resilience Partnership Strategic Co-ordination Protocol version 7.3 dated February 2017¹⁹ (the Protocol) is published by the London Resilience Group (LRG). The LRG is part of the London Resilience Forum established under the CCA. The LRG is jointly funded by the Greater London Authority, London local authorities and the LFB (but at the time of the Grenfell Tower fire by its predecessor, the LFEPA). The LRG had its headquarters at the LFB's head office.
- 30.25 The Protocol establishes the escalating co-ordination arrangements for London's response to a disruptive incident, including a Major Incident and is intended to complement the Procedure Manual (section 1.1). It lays down the principles for establishing command structures through strategic co-ordination groups (SCGs), which are the top tier of command of multi-agency co-ordination, below which sit the Tactical Co-ordinating Group (TCG) and Operating Co-ordinating Group (section 1.3.3-1.3.7).
- 30.26 The Protocol distinguishes between a Critical Incident (as defined by the MPS) and a Major Incident (using the JESIP definition set out above). A Critical Incident is any incident where the effectiveness of the police response is likely to have a significant effect on the confidence of the victim, their family and/or the community.
- 30.27 This shows that although each emergency service has its own definition of different gravities of incident, a Major Incident always gives rise to a multi-agency response. The Protocol proceeds under Part 2 to set out some 15 "core functions", including notification of strategic co-ordination arrangements, carrying out the detailed roles and responsibilities of the SCG, TCG and OCG, creating and maintaining shared situational awareness, determining strategy and decision-making.
- 30.28 At the front of the Protocol there is a schematic colour-coded six-page guide under six heads: Notification, Assessment, Co-ordination Level, Activation, Response Strategy and Recovery. Beyond this, as with the Joint Doctrine, much of the Protocol is at a high level of abstraction containing little beyond statements of the obvious, and does not appear to leave much to common sense. But, like the Joint Doctrine, the basic imperative is plain enough: for emergency services to communicate with each other properly and in a timely fashion in the event of a Major Incident in order to formulate and execute a co-ordinated plan.

¹⁹ [MET00023288].

3 Arrangements for Inter-agency Communications

30.29 Before embarking on an examination of the actions of the MPS and the LAS on the night of the fire it is necessary to understand the key elements of the communications systems used by the various emergency services. The systems used by the LFB have been described in Chapter 7. The systems used by the MPS and the LAS are described below.

The MPS communications systems

30.30 In his written witness statement to the Inquiry Chief Inspector Winch described in general terms the MPS's systems for handling emergency calls and communicating both internally and with the other emergency services.²⁰ For present purposes his evidence can be summarised as follows:

Emergency calls

- a. When someone dials 999 the call is answered by a BT emergency operator, who finds out which emergency service the caller requires. If the caller is unable to say which service they require, or the line is cut, the call is put through to the police control room. The MPS has two automated systems for handling calls: the Call Handling System (CHS) and the Computer-Aided Despatch (CAD) system.
- b. BT puts the call through to CHS in the police control room at one of three locations in London: Bow, Lambeth and Hendon (collectively known as MetCC). The system automatically enters details of the caller, their location and certain other matters.
- c. Once the minimum amount of information has been obtained the call is "passed" by the CHS call handler to the borough "pod" for the location of the incident. ("Passing" is a technical term; it means that the call has been transferred to a pod and entered on the CAD system, but the original call handler remains on the line to the caller.)
- d. If the call is passed to a pod it becomes a CAD and is given a CAD number, time and level of importance.²¹ The location to which the police officers have been called is entered. The person organising the response to the call (known as the "despatcher") then acknowledges the CAD. Where there are a large number of calls to the same incident the first CAD number generated for that incident is the "working CAD"; in the case of Grenfell Tower it was CAD 482. That CAD is the place where MPS operators (MetCC) subsequently record their actions and additional information. Later CADs relating to the same incident are linked to the "working CAD".
- e. The MPS has a standard operating procedure (SOP 300) for abandoned calls from landlines or mobile telephones, which require the MetCC operator to try to call the caller back twice before referring the matter to a controller to decide whether to close the call.²²

Radio communications

Every borough within the area covered by the MPS has a main channel known as Despatch 1, which is then identified by its borough code. The borough code for Kensington and Chelsea on the night of the Grenfell Tower fire was BS Despatch 1. Communications on that channel

²⁰ [METS00020664].

²¹ There are four grades of call: Immediate, Significant, Extended and Referred.

²² Refer to the flow charts at GNW1; [METS00020665] and [METS00020666].

were monitored constantly by MetCC and could be heard by all police officers monitoring the channel. In addition to the main channel the MPS operated a support channel, which could be used for non-urgent matters such as Police National Computer checks. Further, officers could use despatch channels for other boroughs if need be, and there were various additional channels which could be used by officers for longer discussions without impeding the use of the despatch channel.

Liaison with other emergency services

- a. The MPS has a CAD link with the LAS, which allows call handlers and despatchers to send a message to the LAS by means of the CAD instead of having to make a telephone call. It is designed to deal with individual 999 calls where the MPS decides that the incident requires the attendance of the LAS and vice versa. This facility is independent of the call passing, so an ambulance can be called even before the incident is passed. When a CAD is passed to the LAS the LAS receives the pre-formatted dialogue box with the details of the caller, location and an assessment of their medical condition.
- b. The MPS has no CAD link with the LFB, possibly because of the incompatibility of systems. MetCC communicates with the LFB by telephone, usually through a unit called DI/10 (sometimes known as the contact desk) which sits at the MetCC room at Lambeth, as well as by other methods, including radio. If a Major Incident occurs, the emergency services commanders normally gather in the special operations room at Lambeth, as they did during the night of the Grenfell Tower fire.

The LAS communication systems

30.31 Evidence about the LAS's communication systems was given orally by its Director of Operations, Paul Woodrow, who also provided a witness statement to the Inquiry.²³ The LAS's Incident Response Procedures comprise Annex C to his statement. In summary:

- a. The LAS control room communicates with the LFB by telephone, not by CAD.²⁴
- b. The LAS can also communicate with the LFB by Airwave radio and there is also a "tri-agency" channel, on which critical information can be shared. That channel is monitored at the LAS incident management desk or, once an incident has been declared a "significant incident", by the special operations centre.²⁵
- c. The LAS has an electronic CAD link to the MPS, which allows each service to transfer messages directly into the other's CAD system, although it does not allow either of them to view the other's CAD log.²⁶

30.32 The LAS Incident Response Procedures contemplate two types of serious incident, "Significant Incidents" and "Major Incidents".

Significant Incident

The LAS²⁷ definition of a Significant Incident is:

"Any incident which from initial intelligence will require attendance of a number of resources along with a management presence or dedicated response."

²³ [LAS00000009].

²⁴ Woodrow Day 72/66/2-11.

²⁵ Woodrow Day 72/66/2-67/5.

²⁶ Woodrow Day 72/67/6-25.

²⁷ Section 1.1 of the LAS Incident Response Procedures [LAS00000008] p. 21.

Significant Incidents include fires where there are “persons reported” and fires which are attended by six pumps, as well as any incident which another emergency service has declared to be a Major Incident. The declaration of a Significant Incident triggers a pre-determined response of four ambulances, two Incident Response Officers (IROs) and two Operational Commanders²⁸ and requires consideration to be given to the attendance of specialist resources such as a Hazardous Area Response Team (HART).²⁹ It also puts control of the incident into the hands of the Special Operations Centre.³⁰ The Special Operations Centre is based at Bow and at Waterloo Road. It is a dedicated management suite within the control room. It has numerous functions including the central co-ordination of incident activity and the management of Airwave talkgroups and communication.

Major Incident

The LAS adopts the NHS’s definition of a Major Incident, namely,³¹

“A Major Incident is any occurrence that presents serious threat to the health of the community, or causes such numbers or types of casualties, as to require special arrangements to be implemented.”

This is not the same as the JESIP and LESLP definition, but the JESIP principles are embedded in all LAS Incident Response plans and training and the LESLP Procedures Manual governs the LAS response at the scene of a Major Incident.³²

- 30.33 The LAS expects the LFB to be the lead emergency service for a fire of the kind that occurred at Grenfell Tower. As such it expects to be told how much of the building is affected, how many flats are in the building, broadly how many casualties there are, how many people have left the building unaided or with assistance and how the LFB intends to fight the fire or evacuate the residents.³³ In terms of the LAS’s experience of communications with the LFB, the reality is that there is very little joint operation between them, not least because less than 1% of the 1.9 million emergency calls received by the LAS annually are to fire-related incidents. Paul Woodrow rejected the suggestion that historically there had been any “overarching problems” with communication with the LFB at incidents.³⁴
- 30.34 The LAS expects the MPS to manage access and to cordon off the scene of the incident to ensure the safety of its personnel. It looks to the local authority as a fellow Category 1 Responder to provide reception centres for patients who are mobile and are not in immediate need of being taken to hospital.³⁵

4 The response of the MPS and the LAS

- 30.35 In the light of all the evidence it is clear that on the night of the fire the responses of the Category 1 Responders (i.e. the MPS, the LAS and RBKC, in addition to the LFB), did not fully adhere to the principles contained in the Joint Doctrine, the Procedure Manual or the Protocol. The principal flaw, common to all, was poor communication, both at control room level and on the incident ground, which meant that individual organisations were often working in isolation and in ignorance of what the others were doing.

²⁸ Section 4.6.3 of the LAS Incident Response Procedures [LAS00000008] p. 73.

²⁹ Woodrow Day 72/83/21-85/1.

³⁰ Woodrow Day 72/88/14-89/2.

³¹ Section 1.2 of the LAS Incident Response Procedures [LAS00000008] p. 22.

³² Sections 1.13 and 1.14 of the LAS Incident Response Procedures [LAS00000008] pp. 27-30.

³³ Woodrow Day 72/73/22-74/1-18.

³⁴ Woodrow Day 72/75/22-25.

³⁵ Woodrow Day 72/62/3-20.

Separate declarations of a Major Incident

- 30.36 The concept of a Major Incident lies at the heart of the joint emergency services' response enshrined in the Joint Doctrine, the Procedure Manual and the Protocol. Declaring a Major Incident, even where it has previously been declared as a "Critical Incident" (the MPS) or a "Significant Incident" (the LAS), is, as Inspector Thatcher said, a massive step.³⁶
- 30.37 As is clear from section 2 of the Procedure Manual, a Major Incident can be declared by any one or more of the emergency services. What appears to be a Major Incident to one may not appear so to another and each of the emergency services should attend in accordance with the appropriate pre-determined response without necessarily themselves declaring a Major Incident.³⁷ However, if one emergency service declares a Major Incident that fact must be communicated to the others immediately so that they can respond appropriately and establish inter-agency communication.
- 30.38 In the case of the Grenfell Tower fire,
- a. the MPS declared a Major Incident at 01.26.32;
 - b. the LFB declared a Major Incident at 02.06.38; and
 - c. the LAS declared a Major Incident at 02.26.53.³⁸
- 30.39 In no case did the emergency service making the declaration take immediate steps to inform either of the others that it had done so. In no case did the emergency service making the declaration know when it took that step whether either of the others had already done so, or take any steps to find out whether that was the case.

The declaration of a Major Incident by the MPS

- 30.40 In the case of the MPS, Inspector Thatcher said that he had not given a second thought to whether the LFB or the LAS had already declared a Major Incident.³⁹ He had received training on JESIP, which is why he recognised that it fell to him to make the declaration,⁴⁰ but he did not appear to realise that the Joint Doctrine required him to send a METHANE message to his own control room as soon as possible. He simply trusted MetCC to send it.⁴¹ MetCC did not send it, and neither he nor, it appears, Detective Superintendent Warnett checked with MetCC that it had been sent.⁴²
- 30.41 For their part neither the LAS⁴³ nor the LFB⁴⁴ was aware that the MPS had declared a Major Incident, either at the time it was declared or at any later stage during the night. At 01.41.42, when the LAS declared a significant incident, it did not know that the MPS had already declared a Major Incident, a fact that Paul Woodrow told the Inquiry was unusual. As he said,

³⁶ Thatcher Day 71/36/5-37/4.

³⁷ For example, section 1.6 of the LAS Incident Response Procedures [LAS00000008] p. 25 and the Strategic Co-ordination Protocol [MET00023288] paragraph 1.4.7 p. 12.

³⁸ It should be noted that the time recorded on the CAD for a particular event is the time when the entry is recorded by the operator.

³⁹ Thatcher Day 71/39/11-13.

⁴⁰ Thatcher Day 71/37/5-18.

⁴¹ Thatcher Day 71/42/6-20.

⁴² Thatcher Day 71/49/14-50/4.

⁴³ Woodrow Day 72/89/3-5.

⁴⁴ O'Loughlin Day 47/186/1-4.

he would have expected that information to be conveyed to them.⁴⁵ That information could have been communicated to the LAS through the shared Airwave channel 3 which was up and running by that time.⁴⁶

- 30.42 If the LFB had known that the MPS had declared a Major Incident some 35 minutes before GM Richard Welch took that step at 02.06.38, it is a fair inference that he would not have thought it necessary to send his own METHANE message.
- 30.43 When Chief Inspector Duane Barrett briefed Commander Jerome about the incident at 02.30, he told him that the MPS had declared a Major Incident.⁴⁷

The declaration of a Major Incident by the LFB

- 30.44 The following sequence of events occurred:
- The LFB first alerted the LAS to the fire at Grenfell Tower as a 20 (then 25) pump fire with “persons reported” at 01.29.06.⁴⁸ Paul Woodrow’s evidence was that the LFB should have called the LAS earlier to alert them to the fire.⁴⁹
 - When GM Welch declared a Major Incident at 02.06.38, he did not know that the MPS had made a similar declaration at 01.26.32, or at all, since the MPS had not communicated that fact to the LFB.
 - At 02.27.39, some 20 minutes later, the LFB informed the LAS by telephone call from AOM Debbie Real in the LFB control room that it had declared a Major Incident,⁵⁰ but it was not accompanied by a METHANE message from the LFB.
 - Although GM Welch asked for a METHANE message to be sent, that was not done.⁵¹ He had given the task to GM Stephen West, who was only part way through writing the contents of the message on a whiteboard on CU8 when he was distracted by an attempt (in the end unsuccessful) to make channel 2 on the fireground radio available for use by the commanders.⁵² The incident commander (then DAC Andrew O’Loughlin) failed to follow the matter up and ensure that the METHANE message was sent.
 - At 02.38.06 the LFB informed the MPS that it had declared a Major Incident.⁵³ Inspector Thatcher was told about the declaration by DAC O’Loughlin soon afterwards when they met at 02.39 on CU8.

The declaration of a Major Incident by the LAS

- 30.45 The LAS did inform both the LFB and the MPS of its declaration of a Significant Incident,⁵⁴ in the case of the LFB at 01.52 and in the case of the MPS at about the same time (around 10 minutes after the event). Paul Woodrow said that it was “imperative” that the information that a significant event had been declared should be communicated to partners as soon as

⁴⁵ Woodrow Day 72/89/3-10.

⁴⁶ Woodrow Day 72/89/11-16.

⁴⁷ Jerome witness statement [MET00023286] p.12.

⁴⁸ [INQ00000378].

⁴⁹ Woodrow Day 72/76/23-24.

⁵⁰ [INQ00000380] and CAD 247 [MET00019931] p. 8. Refer also to Woodrow Day 72/118/6-119/12. Paul Woodrow said that he did not think that it would have changed anything that the LAS had done at that point.

⁵¹ Welch Day 44/59/18-60/20.

⁵² West witness statement [MET00017073] pp. 5-6.

⁵³ In AOM Real’s admin line call [INQ00000375].

⁵⁴ Which it had declared at 01.41.42.

practicable.⁵⁵ The LAS then confirmed the declaration of a Significant Incident and sent a METHANE message over the radio. There is no evidence that either the LFB or the MPS picked up the fact that the LAS had sent a METHANE message.

- 30.46 After a further 30 minutes the LAS declared a Major Incident at 02.26.53. That declaration occurred as a result of Laurence Ioannou's visit to CU7 and his discovery that there were FSGs reporting 40 people trapped in the building and patients coming out unconscious. He gave another METHANE message reporting 40 people trapped and two unconscious children.⁵⁶ The purpose and effect of his declaring a Major Incident was to increase the resources at the incident to 20 ambulances, eight officers, a HART (although four were despatched at 01.34 and one was already at the scene from 01.45), specialist vehicles and equipment, and a Medical Emergency Response Incident Team.⁵⁷ Four hospitals were put on standby and more staff had been allocated to the LAS special operations room at Waterloo Road.⁵⁸
- 30.47 For its part the LAS did communicate its declaration of a Major Incident to both the MPS and the LFB, or so Paul Woodrow believed.⁵⁹ Although there is no record of these communications in the CADs or the SIL, the information may have been communicated by telephone or some other means. If LAS did tell the LFB, it is likely that Laurence Ioannou told the LFB incident commander on the fireground (at that point DAC O'Loughlin).

RBKC

- 30.48 It was only at 02.42.38 that RBKC was told by the LFB (AOM Real)⁶⁰ that a Major Incident had been declared. One can well see that the LFB control room had been swamped with calls up to that point and that AOM Real may not have been able to get around to notifying RBKC until that time (not least because the LFB control room had been occupied with instructing CROs to change the advice they were giving to 999 callers from "stay put" to "get out"), but there is nothing to explain why neither the MPS nor the LAS saw fit to tell RBKC as a fellow Category 1 Responder that a Major Incident had been declared.

Major Incident: consequences and conclusions

- 30.49 There is much to commend about the emergency services' joint working on the night of the fire. For example, the TCG meetings which were effectively led by AC Roe provided a useful and substantially effective forum in which the emergency services' senior representatives were able to share information and seek to co-ordinate their respective responses. The MPS's policing of the incident ground was particularly sensitive to the demands of the situation. It should also be borne in mind that the circumstances which the emergency services faced were undoubtedly challenging. As Paul Woodrow said in evidence:⁶¹

"So I think this was unprecedented. So from my experience ... the emergency services have a close relationship, they do work together, we do exercise together. I just think that the nature and scale of this incident, and I think that there were other environmental challenges that were in play there, which just made it very difficult. Information was shifting and it was changing constantly, and I just think that just created a very difficult environment to maintain those clear communication challenges"

⁵⁵ Woodrow Day 72/94/22-25. He could not explain the delay.

⁵⁶ Ioannou witness statement [MET00010862] p. 7.

⁵⁷ Section 4.6.3 of the LAS Incident Response Procedures [LAS00000008] p. 74; Woodrow Day 72/104/17-105/5.

⁵⁸ Ioannou witness statement [MET00010862] p. 7; this is broadly reflected the section 4.6.3 of the LAS Incident Response Procedures p. 74 although not in terms. Refer to Woodrow Day 72/109/1-4.

⁵⁹ Woodrow Day 72/109/5-15.

⁶⁰ [INQ00000188].

⁶¹ Woodrow Day 72/102/7-16.

- 30.50 Although I accept that, in the circumstances, it would be unrealistic to expect complete compliance with each and every aspect of the Joint Doctrine and its supporting manuals and procedures, there were failings in the operation of the inter-service arrangements. The disjointed and haphazard nature of the various declarations of a Major Incident involved a significant departure by each of the emergency services from the principles set out in the Joint Doctrine, the Procedure Manual and the Protocol. That departure may be explained by the rapidly escalating nature of the incident and the need of each senior officer present to attend to more pressing matters, but it is precisely for Major Incidents such as the fire at Grenfell Tower that the Joint Doctrine was designed.
- 30.51 In terms of their operational response, it is difficult reliably to identify the consequences of the departures from the Joint Doctrine. There is little doubt that, if the LAS had known about the declaration of a Major Incident by the MPS at 01.32, or the declaration by the LFB at 02.06.38, far greater LAS resources would have been available at Grenfell Tower much earlier, but it is difficult to say precisely when. It was only at around 03.00, some 35 minutes after the declaration by the LAS that, as Paul Woodrow put it, the “full predetermined attendance for a Major Incident was met”.⁶² It is therefore reasonable to infer that if the LAS had known about and had responded to the declaration of a Major Incident by the MPS at 01.26, resources appropriate for a Major Incident would have been at the tower by around 02.00, an hour earlier than in fact was the case. However, there is no evidence that a departure from the Joint Doctrine by any of the emergency services caused or contributed to the death or injury of any person at Grenfell Tower.
- 30.52 It is also likely that the disjointed timing of the METHANE messages meant that the nature of the hazards (H) and the possible numbers of casualties (N) were not the subject of the shared understanding which the joint operability documents all treat as essential to the formulation of a joint strategy. For example, it was only when the LAS discovered the number of casualties and of people trapped in the building that, at 02.26.53, it declared a Major Incident. If it had heard the LFB declaration at 02.06.38, and if the LFB had then sent a METHANE message, the LAS would probably also have declared a Major Incident at that stage, with the consequent increase in resources.
- 30.53 Although the MPS did not send a METHANE message following its declaration of a Major Incident at 01.32, it is not clear what information which would have made a significant difference to the actions of the LFB or the LAS would have been contained in it, not least since the LFB had increased its resources to 25 pumps at 01.31.48.
- 30.54 There remains the question why the LFB did not declare a Major Incident before 02.06.38. At 01.38.51 AC Andrew Roe, having been called to the incident by radio pager, called the control room and spoke to AOM Peter May.⁶³ He told the Inquiry that, as a result of what he heard on that call, “All of my instincts as a professional officer told me I was driving towards a Major Incident”.⁶⁴ Yet neither WM Michael Dowden nor SM Andrew Walton nor DAC O’Loughlin, all of whom were at the incident ground and had held incident command at some point before 02.06, took it upon themselves to declare a Major Incident.
- 30.55 That is much less a criticism of the joint working arrangements between Category 1 Responders than it is of the LFB, but it does lay bare one truth about the concept of a Major Incident, namely, that it may be easier to make a judgement about whether to declare a Major Incident when one is at a distance from the scene rather than in the midst of the action having to

⁶² Woodrow Day 72/107/15-25.

⁶³ [INQ00000202].

⁶⁴ Roe Day 48/198/16-18.

make command decisions in a rapidly changing and dangerous environment. It is perhaps no coincidence that Inspector Thatcher declared a Major Incident before he arrived at the tower on the basis of what he could see at a distance from the top of Ladbroke Grove.

- 30.56 One of the consequences of the declaration of a Major Incident by the emergency services is that there should be a multi-agency conversation between the control room leads. This was a requirement of the joint operating requirements established under the Joint Doctrine, particularly sections 5, 6 and 6.1.1, which requires that following the declaration of a Major Incident a dialogue between control room supervisors should be established as soon as possible. That was also a requirement of the Procedure Manual (section 4, and particularly section 4.2). Commander Jerome told the Inquiry that the Grenfell Tower fire was an incident that particularly called for such a conversation.⁶⁵ The evidence that such a conversation ever took place is at best unclear.⁶⁶

Communications between the emergency services

- 30.57 Communication between the emergency services on the night of the fire, both remotely and on the incident ground, was poor. It did not meet the standards expected by the provisions of the Joint Doctrine, the Procedure Manual and the Protocol. Indeed, Paul Woodrow (LAS) accepted in his witness statement that communication between the emergency services could have been better on the night.⁶⁷

Remote communications

- 30.58 The LAS control room normally communicates with the LFB control room by telephone.⁶⁸ Paul Woodrow accepted that the LFB should have called the LAS earlier to alert them to the fire (the first call that the LFB made to the LAS was at 01.29).⁶⁹ Although LFB communications could have been recorded on the MPS's CAD if that information had been entered by MPS operators located on DI/10 or DI/9 (about which the evidence remains incomplete), the absence of a direct CAD link between the LFB and either the LAS or the MPS which did not depend upon the intervening actions of MPS operators meant that the LFB's communications could not be directly recorded on the MPS or LAS CADs.
- 30.59 The LAS has a CAD link with the MPS and vice versa and these emergency services can update each other's CADs although they cannot see them. Of course, the CAD was not the sole means of communication between the three emergency services and information could be (and was) shared by telephone or shared radio channels. That was demonstrated by the use of one of the two shared tri-agency radio channels, both of which were being monitored.
- 30.60 However, despite the fact that the tri-agency radio channels were being used and monitored by the LAS control room,⁷⁰ as was normal,⁷¹ it is not clear from the evidence how widely they were actually used on the night. Paul Woodrow's evidence was that he would have expected messages from the tri-agency radio channels to be recorded in LAS CAD 247 by the loggist,⁷² and indeed CAD 247 records some messages on channel ES3, mainly from the NPAS

⁶⁵ Jerome witness statement [MET00023286] pp. 6, 12; Jerome Day 71/172/20-179/6.

⁶⁶ Winch witness statement [METS00020664] p. 10.

⁶⁷ Woodrow witness statement [LAS00000009] p. 27.

⁶⁸ Woodrow Day 72/66/2-7.

⁶⁹ Woodrow Day 72/76/9-24.

⁷⁰ CAD 247 entry at 01.57.52 noting that the MPS were asking the LAS to liaise with the NPAS helicopter on one of the tri-agency channels [MET00019931] p. 5; Woodrow Day 72/111/19-112/4.

⁷¹ Woodrow Day 72/66/7-22.

⁷² Woodrow Day 72/112/18-113/1.

helicopter to the LAS.⁷³ Critically, the tri-agency radio channels do not appear to have been used to inform either the LAS or the MPS control room about the abandonment of the “stay put” advice.⁷⁴ There is only one instance of the LFB using channel ES3 to communicate with the other services, which occurred at 04.38.46.

- 30.61 It seems that any information that the LAS had about patients which it decided to pass to the LFB was communicated by telephone on a case-by-case basis.⁷⁵ Three emergency calls received by the LAS from people inside the tower were not passed on to the LFB, based on individual decisions made by the LAS’s despatch deployment sector. There is no evidence as to how those decisions were made, but Paul Woodrow told the Inquiry that there was no protocol or policy in place requiring the LAS to pass all FSG callers to the LFB. This was, as he fairly accepted, an area where improvement was required.⁷⁶
- 30.62 It is not clear that Supporting Principle 1 in paragraph 6.1.1 of the Joint Doctrine (see above) was fully satisfied. There should have been a single point of contact in each control room and the establishment of a method of communication between them. Paul Woodrow, on behalf of the LAS, did not know if appropriate arrangements had been in place on the night.⁷⁷ He accepted that it would have helped to have had a single point of contact in place and that its absence clearly contributed to difficulties in communication.⁷⁸ In relation to the LFB, the evidence indicates that there was no single point of contact in its control room who was communicating with counterparts in the LAS or the MPS. Therefore, irrespective of the arrangements that the MPS may have had in place, it is not clear whether the other two emergency services had implemented the requirements of Supporting Principle 1.
- 30.63 Similarly, it is clear that Supporting Principle 2 in section 6.3.1 of the Joint Doctrine, which requires control room supervisors to engage in multi-agency communications and carry out the initial actions to manage the incident, was never complied with properly.
- 30.64 One possible reason for these failures of communication is that the Joint Doctrine was not engaged at the earliest opportunity. Given the independent declarations of a Major Incident by each emergency service and the fact that they were not communicated to either of the others, it is hard to pinpoint when anyone realised that a co-ordinated response was required. Inspector Thatcher recognised it and declared a Major Incident at 01.26.32. It was recorded on CAD 482 at 01.32.27 but that was not communicated to the other services.⁷⁹ It is obvious that a declaration of a Major Incident which is not communicated to the other emergency services is all but useless for the purposes of engaging the Joint Doctrine principles.
- 30.65 That is not to say that there was no communication at all between the MetCC and the LFB control room. There are sporadic examples of contact, such as the call between the MPS and the LFB at 01.46.18, in which the MPS operator asked CRO Yvonne Adams whether there was any advice they could give callers, as there was a distressed caller stuck on floor 16 (Flat 133, Sener Macit).⁸⁰ The details of this call are set out in Chapter 29.

⁷³ CAD 247 [MET00019931]. For example, refer to the messages at 01.57.52 and 01.59.43. There were then seven further entries on CAD 247 recording the use of channel ES3 between 02.10.20 and 04.38.46.

⁷⁴ Woodrow Day 72/111-116.

⁷⁵ For example, at 02.21.41 LAS’s despatch deployment sector desk sent a telephone message to the LFB about “patients alive on 25th floor”: refer to Woodrow witness statement [LAS00000009] p. 10 and Day 72/115/10-116/21.

⁷⁶ Woodrow Day 72/116/22-117/25.

⁷⁷ Woodrow Day 72/71/12-72/9.

⁷⁸ Woodrow Day 72/119/13-120/10.

⁷⁹ Thatcher Day 71/35/2-18.

⁸⁰ [LFB00000326]. The MPS recording of this call is CAD 578 [INQ00000280] p. 4, which has a slightly different time of 01.45.28.

The heli-tele downlink

- 30.66 I have touched on the heli-tele downlink in Chapter 28 and Chapter 29 so far as its failure to function on the night of the Grenfell Tower fire adversely affected LFB operations. Here I examine in more detail why it did not work.
- 30.67 The heli-tele downlink is an encrypted visual communication system which enables the NPAS helicopter to transmit images from its video cameras to the LFB's receiving equipment in the command units and control room. Each of the NPAS helicopters present at Grenfell Tower on the night of the fire was fitted with an airborne data link. Fixed receivers are fitted in 10 MPS vehicles and LFB command units. A series of channels and encryption protocols are built into the airborne data link systems. There are four channels used across the UK, of which channel D is the default. Within each channel is a series of encryption keys, the two main keys being the National Emergency Service user key, which is installed in every piece of transmitting and receiving equipment used by the emergency services throughout the country, and the National Police user key, which is installed in all MPS equipment (fixed and portable) but for reasons of security not in the equipment used by the other emergency services. In order for an LFB command unit to receive video signals from an NPAS helicopter and watch the live feed it is necessary for the both the transmitter and the receiver to have the same encryption keys installed. When the equipment fitted to the MPS helicopters is switched on it defaults to channel D, and within it to the National Emergency Service encryption, which all emergency service vehicles have and which allows access to the helicopter video link.⁸¹
- 30.68 Unfortunately, on the night of the fire the three MPS helicopters were being serviced. The helicopters that attended the incident were equipped with an airborne data link system which did not default within channel D to the National Emergency Service user encryption but to the National Police user encryption. That meant that the LFB did not have the relevant encryption key in its receiving equipment. That was not evident to the NPAS crews at the time because they had never received any training on the differences between the two systems.⁸² Accordingly, until the MPS provided the LFB with portable downlinks using the correct National Police user encryption, the firefighters could not view the images.
- 30.69 It is unclear when, if ever, the portable downlinks actually reached the incident ground, and a serious question arises about whether the video feed from the helicopters was ever available to the LFB. Daniel Arnold, an NPAS Sergeant and the Base Manager at Lippitts Hill (the NPAS London base), said that the portable downlinks had the same encryption keys as the helicopter, which enabled the video to be viewed.⁸³ However, the LFB officers who were asked about it said that they could not receive the NPAS helicopter video at any stage of the incident and, although his timings were "very hazy", SM Peter Johnson said that the LFB officers in CU8 could not view the heli-tele pictures until around 10.00 or 10.30 on 14 June 2017, when they were told by a police officer that it was now working and that the feed had been "scrambled" up to that point.⁸⁴

⁸¹ Arnold second witness statement [MET00039527] pp. 1-2.

⁸² Arnold second witness statement [MET00039527] p. 2.

⁸³ [MET00039527] p. 2.

⁸⁴ Johnson Day 37/21/6-25/1. SM Johnson can clearly be seen on the Thatcher body-worn video footage at 02.37 [INQ00000520] inside CU8 telling Inspector Thatcher that the helicopter downlink was not working. Some BSRs suggested that the clip reveals that the LFB officers on CU8 said that they did not have time to use it, but it is not easy to see or hear where in the clip this appears.

- 30.70 I tend to prefer the LFB's evidence on this question, not least because, if the portable downlinks had been working by around 04.00, it is probable that the fact would have been recorded in the Roe Log and that at least some of the LFB officers who gave evidence would have recalled it. Further, Sergeant Arnold does not say when the portable downlinks did successfully provide the LFB with video images.
- 30.71 It remains wholly unclear whether having access to the NPAS video feed at that stage of the incident would have had a material bearing on the outcome. However, it must remain a matter of criticism that the NPAS helicopters which did attend all defaulted to a channel which disabled the LFB from being able to view the live feed until many hours into the incident. The first NPAS helicopter to arrive at Grenfell Tower (NPAS 44) was there before 01.45.25 and it would have been extremely valuable, at that crucial stage in the incident, for the LFB to have been able to obtain an aerial view of all four sides of the tower. It is not clear whether that would have made any difference to the strategy which WM Dowden had adopted up to that point, but it might well have assisted both him and succeeding incident commanders. If nothing else, it might have enabled them to appreciate that the fire was not confined to the exterior of the building, as they appear to have believed, but had penetrated a large number of flats, with the result that the compartmentation of the building had completely failed. Their failure to appreciate that the fire had penetrated the interior of the building contributed to the delay in the decision to revoke the "stay put" advice to residents. Seeing the visual images might also have brought forward the point at which the LFB declared a Major Incident.

Communications on the incident ground

- 30.72 Paul Woodrow's evidence was that, in ideal circumstances, the LFB and LAS would have had their control units close together, but it had not happened on the night.⁸⁵ He said that the first person to attend from the LAS should make an initial assessment of the scene, report back, and then speak to the LFB incident commander.⁸⁶
- 30.73 That did not happen and, even allowing for the exigencies of the night, it is unfortunate that there was no communication between senior officers from the three emergency services at the scene until well into the incident (although there was of course communication between more junior officers from each service at much earlier stages of the incident). In particular:
- a. The first face-to-face meeting between the senior LAS officer and the LFB incident commander did not occur until around 02.23, when Laurence Ioannou went to CU8 and spoke to DAC O'Loughlin. Until that point it appears that he had not known who was in command,⁸⁷ although he had arrived at 01.49. According to Paul Woodrow that meeting was unusually late, but he attributed the delay to the "unprecedented" nature of the incident. Laurence Ioannou tried, initially without success, to find and talk to the LFB's incident commander, but did manage to have a brief conversation with SM Walton shortly after arriving.⁸⁸
 - b. The MPS Silver Commander (Inspector Thatcher) first spoke to DAC O'Loughlin at around 02.39. The MPS Gold Commander (Detective Superintendent Warnett) first met the LFB incident commander at the first TCG meeting, which took place at 03.20.
 - c. It is uncertain whether, and if so when, Laurence Ioannou met or spoke to either Inspector Thatcher or Detective Superintendent Warnett before the first TCG meeting at 03.20.

⁸⁵ Woodrow Day 72/63/13-22.

⁸⁶ Woodrow Day 72/63/13-64/19.

⁸⁷ Ioannou witness statement [MET00010862] p. 6.

⁸⁸ Woodrow Day 72/101/12-102/3; refer also to Ioannou witness statement [MET00010862] p. 7.

- 30.74 It is possible that an examination of the CAD messages to and from MPS officers in addition to those shown on CAD 482 and other linked CADs might reveal that the emergency services were communicating with each other on the incident ground to a greater extent than CAD 482 itself indicates, and I recognise that CAD 482 may not fully convey the sheer volume of communications between the emergency services. However, what matters is not how often officers from the different emergency services communicated with each other but whether important information and decisions were shared at a senior level. I think it unlikely that the detailed and time-consuming analysis of all the available CAD messages that would be required would identify any further important communication of that nature of which I am currently unaware.
- 30.75 Section 6.3.2 of the Joint Doctrine (Supporting Principle 4) makes it clear that it is desirable for commanders to meet in person and speak directly to each other. These delays in face-to-face communication between the senior officers for the three emergency services present on the incident ground constituted a failure to comply with sections 6.3.1 and 6.3.2 (Supporting Principle 5) of the Joint Doctrine. Section 6.3.2 required the LFB as the lead responder to suggest a location for commanders to co-locate in the early stages of the incident, or agree an initial rendezvous point with the other control rooms and communicate it to the commanders as soon as possible. That did not happen. It was a further departure from the fundamental principles of the Joint Doctrine by each emergency service, but primarily by the LFB.

Change to the “stay put” advice

- 30.76 There is no evidence to explain why the LFB did not tell either the MPS or the LAS about its decision to abandon the “stay put” advice, either after SOM Joanne Smith had made the decision in the LFB control room at around 02.35 or after AC Roe had made the same decision on the incident ground at 02.47.
- 30.77 The LFB did not tell the MPS about its decision to abandon the “stay put” advice until shortly before 03.08.07, when MetCC broadcast the message to all police officers. Inspector Thatcher knew by the time of the first TCG meeting at 03.20 that the advice had changed, possibly because he had heard the information when it was broadcast a second time by MetCC at 03.10.56.⁸⁹ The consequences of this delay in the MPS learning about the change in “stay put” advice are examined in Chapter 29 but, in summary, it is possible that it resulted in “stay put” advice still being given by MetCC operators as late as 03.05.⁹⁰ That is not something for which the MPS can be criticised.
- 30.78 So far as concerns the LAS, Paul Woodrow said that it would be “reasonable” for the LAS to be informed if the “stay put” advice were changed during an incident,⁹¹ but there is no evidence that the LFB did in fact tell the LAS about it before the first TCG meeting, and indeed Paul Woodrow could identify no formal record of the LAS having been told about it at any time.⁹² The Roe Log⁹³ refers to the change in advice and Laurence Ioannou’s recollection was that he had learnt of it at the first TCG meeting.⁹⁴

⁸⁹ Although he did not recall having heard the message. Thatcher second witness statement [MET00023284] p. 10 and Day 71/126/12-127/1.

⁹⁰ CAD 932 [INQ00000281]. Although the transcript of that call does not actually record “stay put” advice being given, equally the operator did not advise the caller to leave at all costs. Refer to Exhibit NAI/2 [MET00023291] in which Commander Jerome refers to that call as giving “stay put” advice.

⁹¹ Woodrow Day 72/127/9-12.

⁹² Woodrow Day 72/133/20-21, 135/19-19.

⁹³ [MET00005404] p. 2.

⁹⁴ Ioannou witness statement [MET00010862] p. 10. Laurence Ioannou actually refers to the second TCG meeting but that is likely to be incorrect given the contents of the Roe Log and Inspector Thatcher’s recollection that it was mentioned at the first TCG meeting.

- 30.79 Given that the LAS's procedure was to stick to their triage scripts, it is not clear whether LAS call-handlers would have handled emergency calls from the tower differently if they had been told earlier that the "stay put" advice had been abandoned. However, as Paul Woodrow accepted in oral evidence, it might have affected their appreciation of the severity of the incident more generally.⁹⁵

Logistical problems at the incident ground

Congestion

- 30.80 There were a number of logistical problems at the incident ground. The primary challenge for the emergency services was congestion resulting from parked emergency and ancillary vehicles in the narrow streets around the tower and the number of firefighters attending the incident. This made it difficult to establish rendezvous points and caused some delay to firefighters attending the incident, because they had to park at a distance and proceed on foot. However, it is difficult to identify any specific instances in which congestion had any particular effect on the delivery of emergency services and in the case of the LAS there appears to have been no significant effect on patient care.⁹⁶

Cordons and crowds

- 30.81 The second major logistical challenge was putting cordons in place to keep people at a safe distance from the building and maintaining public order. The effect on family and friends of watching a tall building burning out of control with their loved ones trapped inside is unimaginable in its horror, and it was wholly understandable that they would wish at all costs to attempt to enter the building and assist with rescue. However, not only would that have put their own lives and the lives of others in danger, it would also have seriously impeded the LFB's operations. The task of the MPS was to establish and maintain cordons at a safe distance from the tower and secure a safe working environment for the LFB.⁹⁷ That was hard to achieve, not only because of burning debris falling from the tower, but because there were occasions during the night (e.g. at around 03.00) when the threat of public disorder was very real. The incident required both the intelligent location of cordons and firm but sensitive policing, both of which were achieved, principally due to the impressive leadership of Inspector Thatcher. There were no public order offences; the crowd was kept away from the tower and in the end became supportive and helpful. In addition, the MPS provided riot shields to protect firefighters and casualties from the falling burning debris. All those aspects of the policing of the Grenfell Tower fire reflect great credit on the MPS and on Inspector Thatcher and Detective Superintendent Warnett in particular.

The identification of casualties

- 30.82 A further question arising out of the emergency services' response to the fire is whether the LAS could have obtained quicker and more reliable information about which flats patients had come from. There is evidence to suggest that survivors, families and friends were unable to find their loved ones because they were not told which hospitals they had been taken to and that it was a difficult and time-consuming exercise to find out where they were.⁹⁸ The anxiety

⁹⁵ Woodrow Day 72/134/2-16.

⁹⁶ Woodrow Day 72/155/1-7.

⁹⁷ Warnett witness statement [MET00080605].

⁹⁸ For example, Helen Gebremeskel [IWS00000933] p. 11 and Nicholas Burton [IWS00000064] p. 21.

born of not knowing what had happened to those caught in the fire in the hours immediately after their evacuation must have been immense and in the case of those occupants who had successfully escaped can only have added to their trauma.

- 30.83 Sections 9.6 to 9.11 of the Procedure Manual call for a number of different kinds of facilities to be established in response to a Major Incident. One (section 9.9) is a casualty bureau to be established by the police at which details of all dead and injured, survivors and evacuees, are collated and which can provide information in response to inquiries from friends or relatives of those believed to be involved in the incident. To avoid discrepancies in casualty numbers all information ought to be routed through the casualty bureau which acts as the sole source of information. The function of the casualty bureau to some extent overlaps with the function of the Survivor Reception Centre (section 9.7) and the Friends and Relatives Reception Centre (section 9.8) in so far as it is a source of information for survivors, friends and relatives.
- 30.84 Having considered the available evidence, I do not think it is possible to say that the casualty bureau was not set up as quickly as reasonably practicable in accordance with sections 9.6 to 9.11 of the Procedure Manual. I have little doubt that it was extremely difficult to obtain all the information required to provide an effective casualty bureau in this case and that when dealing with an incident of this kind it may not always be possible to obtain the information needed to dispel the anxieties of friends and family as quickly as one might wish. However, if there are ways of improving the speed and accuracy of matching casualties with inquiring friends and relations, which is, after all, the aim of sections 9.6 to 9.11 of the Procedure Manual, they ought to be explored and adopted without delay.

Helicopter rescue

- 30.85 Some who lost members of their families in the fire want to know whether people trapped in flats high in the tower could have been rescued by helicopter from the roof of the building or directly from their flats. That is in part because some of those who made emergency calls from within the tower were given the impression that rescue by helicopter might be possible, or at least were not told in clear terms that it was not.
- 30.86 Section 10 of the Procedure Manual deals with the use of helicopters in a pan-London Major Incident. Section 10.1.2 describes the equipment NPAS helicopters usually have on board, and section 10.1.3 lists the support functions that NPAS helicopters can provide. They amount to providing further information and analysis, among other things, to support emergency rescue at the scene and to recording data for later analysis. They do not include actively engaging in rescues, for which NPAS helicopters are not equipped.
- 30.87 If rescue by helicopter had been considered feasible, it would have been possible to call on the services of HM Coastguard's search and rescue helicopters, as contemplated by section 10.4.1 of the Procedure Manual. Under section 10.4.2, for a land-based rescue the MPS would have to alert HM Coastguard helicopters via the Aeronautical Rescue Co-ordination Centre at RAF Kinloss. There can be little doubt, therefore, that even if the rescue of occupants from high in the tower had been possible, the NPAS helicopters at the scene could not have carried it out.
- 30.88 AC Roe did, briefly, consider whether to summon HM Coastguard helicopters. The Roe Log records at 05.40 "AR: MCA hele to consider winching off – investigating" and at 05.45 "Potential deployment of MCA SAR hele".⁹⁹ AC Roe told the Inquiry¹⁰⁰ that he considered it briefly at that time mainly because he had information that there were people trapped on the

⁹⁹ [MET00005404] p. 4.

¹⁰⁰ Roe first witness statement [MET00007520] p. 12 and Day 49/204/10-208/25.

roof of the building. However, as he explained, he quickly discounted helicopter rescue from the roof because of the minimum 45-minute arrival time, the potentially aggravating effect of the rotor downdraft on the fire, the risk to the crew, firefighters and remaining occupants of the building and the inherent difficulty of such a rescue operation. As he put it,

“it was going to be almost impossible to put someone on the end of a winch to get someone out. Let alone, you know, effectively dropping a line into a fire environment.”¹⁰¹

- 30.89 I accept AC Roe’s evidence on that point. A helicopter rescue by HM Coastguard would have been perilous and extremely uncertain, a fact confirmed by the evidence of two officers from the Maritime Coastguard Agency.¹⁰² In any event no occupants of the tower were able to get on to the roof of the building. Calling a rescue helicopter would therefore have been a waste of time. The gate on floor 23 closing off the stairs from the lobby to the roof was locked on the night of the fire, which may explain why no one was on the roof at any time, but even if it had it been open, I am satisfied for the reasons given by AC Roe that it would not have been possible for anyone who had reached the roof and had survived the conditions that they would have encountered there to have been rescued safely.

5 RBKC and the TMO

The role and emergency plans of the RBKC and TMO

- 30.90 RBKC, as the local authority in whose area Grenfell Tower lies, was a Category 1 Responder as defined in the CCA and was subject to the corresponding civil protection duties. RBKC had a formal “Contingency Management Plan”,¹⁰³ which contained the procedure to be followed in the event of an emergency.
- 30.91 The TMO was not a responder under the CCA and therefore was not subject to the corresponding duties. Its functions were set out in the Modular Management Agreement¹⁰⁴ and did not extend either to assuming RBKC’s obligations under the CCA or to assisting RBKC in the discharge of those obligations. That was despite the fact that RBKC’s Contingency Management Plan required its departments and service providers to maintain service emergency plans and procedures. Nor did the TMO have any obligation under the Modular Management Agreement to keep emergency plans and procedures. Although the TMO was not identified in the Contingency Management Plan as a department or a service provider, however, its contact details were listed in RBKC’s Contingency Management Plan¹⁰⁵ and RBKC’s Duty Silver Manual.¹⁰⁶
- 30.92 At the time of the fire the TMO had an emergency plan,¹⁰⁷ but it was not activated in response to the fire because, it was said, of the scale of the incident.¹⁰⁸ Both the TMO emergency plan and the RBKC Contingency Management Plan were silent about how, if at all, they were intended to complement each other in the event of an emergency. There was no reference to the circumstances in which one or other plan would take precedence or whether they were

¹⁰¹ Roe Day 49/208/19-22.

¹⁰² Witness statements of Philip Hanson [MET00013123] pp. 2-3 and Douglas MacDonald [MET00013126] p. 4.

¹⁰³ [RBK00004396].

¹⁰⁴ [RBK00018796].

¹⁰⁵ Annex 01 provided, at p. 22, contact details for the TMO’s “TMO Contact Centre (24/7)” [RBK00014620].

¹⁰⁶ “TMO Out of Hours Service” contact details are listed at p. 40 [RBK00029034].

¹⁰⁷ [TMO10013898].

¹⁰⁸ Black Day 74/147/12-20; Brown Day 75/54/5-56/11.

intended to operate simultaneously and if so how. Given the extent of RBKC's reliance on the TMO for information, the fact that the TMO emergency plan was not activated meant that in certain respects there was no emergency plan at all.

- 30.93 The TMO emergency plan, for what it was worth, was some 15 years out of date. The information about Grenfell Tower on which it was based therefore failed to reflect the changes to the building brought about by the refurbishment in 2016. It contained the wrong number of flats (120 rather than 129) and contained materially inaccurate and out of date details of the numbers of vulnerable residents who would need assistance to evacuate in the event of an emergency. Teresa Brown, who was present at the incident from 03.50, did not realise that the section of the plan containing details of the property was out of date or that it was the responsibility of the Health and Safety team led by Barbara Matthews to make sure that it was correct.¹⁰⁹ How it came about that the TMO allowed such a potentially important document to remain obsolete for so many years is a question which will be explored at Phase 2. Certainly none of the TMO witnesses who were asked about it could offer any explanation.
- 30.94 It cannot have helped that the most senior TMO executives present at the incident, Teresa Brown and Robert Black, had no clear idea of the TMO's functions in relation to it. Teresa Brown described the role of the TMO staff on the night of the fire as "voluntary".¹¹⁰ She thought that they were there to enable them to respond to requests for information from the emergency services and to co-ordinate the rest centres.¹¹¹ She told the Inquiry that the role of Robert Black was to be the point of contact outside CU8.¹¹²
- 30.95 For his part, Robert Black told the Inquiry that the TMO had "no role" in responding to the fire, as the LALOs were present acting on behalf of the local authority.¹¹³ He described the role of the TMO as a "spare part". He said that the TMO emergency plan was not activated because it did not apply,¹¹⁴ and that nobody at the TMO expected it to be activated.¹¹⁵ He also said that, as he was not at any of the TCG meetings, his role was to try and help. He, together with Teresa Brown, was trying to mobilise staff to work within RBKC's plan, mainly to help at rest centres, but he appeared to think that the TMO had "nothing else to offer".¹¹⁶ I can well see that it might have been potentially confusing to activate the TMO emergency plan in parallel with the RBKC plan, but that does not explain why Robert Black thought that the TMO had "no role".
- 30.96 The fact that the TMO had no formal role as a responder, combined with the absence of documented clarity about the applicability of its emergency plan or any contractual obligation to have a plan in place, meant that its senior executives did not have a clear view of what they were supposed to do on the night of the fire. Robert Black, in particular, did not appear to have any clear perception of how he personally, or the TMO as an organisation, could assist either RBKC or the LFB and he had no plan by which he could lead his staff. Critically, his view that the TMO had nothing else to offer was incorrect. It was in possession of, or had access to, important information, such as plans of the building, a list of residents and a list of survivors at rest centres, that had been repeatedly requested by the emergency services and by Nickolas Layton as LALO. That information was unsatisfactorily late in coming to the incident ground.

¹⁰⁹ Brown Day 75/111/10-20. Teresa Brown said that the correct details about numbers of properties were provided early in the morning: Brown Day 75/113/13-114/3.

¹¹⁰ Brown Day 75/56/21.

¹¹¹ Brown Day 75/57/4-16.

¹¹² Brown Day 75/57/23.

¹¹³ Black Day 74/156/21-158/12.

¹¹⁴ Black Day 74/156/8-157/16.

¹¹⁵ Black Day 74/156/21-158/12.

¹¹⁶ Black Day 74/158/1-12.

The LALOs

The role of a LALO

- 30.97 The Inquiry heard from Nickolas Layton¹¹⁷ and Michael Rumble,¹¹⁸ each of whom acted as a LALO for RBKC on the night of the fire and gave evidence about RBKC's immediate response to the incident. Upon notification from the RBKC out of hours call centre, Nickolas Layton, the Borough Duty Officer, informed his superior, David Kerry,¹¹⁹ who set up the Borough Emergency Command Centre (BECC).
- 30.98 Nickolas Layton was sent to the scene as the first LALO,¹²⁰ arriving at 02.47.¹²¹ His role as LALO was to represent the council as "Council Silver" (second level decision-maker), liaise with the emergency services and determine the initial response and call forward resources through the BECC.¹²² He described his role as the "eyes and ears for the BECC".¹²³ That was an important role because he was the sole link between the emergency services and the council.

The LALOs' training

- 30.99 Both Nickolas Layton and Michael Rumble were trained LALOs, Nicholas Layton since 2002¹²⁴ and Michael Rumble since October 2015.¹²⁵ There were, however, differences in the training they had received. Notably, Michael Rumble had undergone a four-day practical multi-agency disaster training course with the LFB. Nickolas Layton had not undertaken such training and said he was not familiar with the JESIP principles.¹²⁶ Neither LALO had previously dealt with a major fire on this scale, although Nickolas Layton had acted as LALO at the fire at Trellick Tower in April 2017.¹²⁷

Record keeping

- 30.100 Nickolas Layton recorded his notes¹²⁸ from the night in a personal notebook, as at that time RBKC did not have its own LALO pack. It has, however, since introduced one.¹²⁹ By contrast, Michael Rumble used a LALO pack from another council (Lambeth), which he said he found helpful in that it provided an aide-memoire of things to consider. Significantly, that included a reference to the potential need for the attendance of a Dangerous Structures Officer.¹³⁰ A LALO pack or notebook would have greatly assisted Nickolas Layton when confronted with such a serious and difficult incident. Such an item would have encouraged a better contemporaneous record of events and in particular may have prompted an early recognition for the need for the attendance of a DSE (a topic to which I return in more detail below). It is surprising and unsatisfactory that RBKC did not have its own incident pack for LALOs and that Michael Rumble was forced to use a Lambeth LALO pack that he had picked up at an LFB training exercise.¹³¹

¹¹⁷ Layton Day 74/3.

¹¹⁸ Rumble Day 74/84.

¹¹⁹ He was employed as a Contingency Planning Officer for RBKC. Layton witness statement [RBK00029034] p. 4.

¹²⁰ Layton Day 74/22.

¹²¹ Layton Day 74/26.

¹²² Layton Day 74/11.

¹²³ Layton witness statement [RBK00029034] p. 4.

¹²⁴ Layton Day 74/5.

¹²⁵ Rumble Day 74/88.

¹²⁶ Layton Day 74/7/2-11.

¹²⁷ Layton Day 74/ 8/20-9/21.

¹²⁸ Exhibit NL/1 of Nickolas Layton [RBK00029036].

¹²⁹ Exhibit NL/4 of Nickolas Layton [RBK00029033] and Day 74/22/22-24/10.

¹³⁰ Exhibit MJSR/4 of Michael Rumble [RBK00029039] p. 6.

¹³¹ Rumble witness statement [RBK00029037] paragraph 8.3 p. 4 and Day 74/99/2-7.

Initial attendance at the scene

- 30.101 It is clear from the evidence that, until he reached the scene of the fire, neither LALO had appreciated the scale of the incident. Michael Rumble arrived at approximately 03.10, before the first TCG meeting, in the role of a second LALO, following a call from David Kerry at approximately 02.45. He had not been made aware of the severity of the incident or of the fact that it had been declared a Major Incident by the police and the LFB.¹³² More effective sharing of information before their arrival at the scene might have equipped them better for their initial duties.
- 30.102 The LALOs did not specifically divide responsibilities between them.¹³³ It would appear that a significant amount of time was devoted to the location and setting up of rest centres for displaced residents. Nevertheless, although substantial demands were made on the LALOs, better co-ordination and division of roles might have made more use of their expertise and might have ensured that information which the LFB had asked for was provided more quickly. For example, when Michael Rumble took over from Nickolas Layton as senior LALO at 07.00, a clearer handover would probably have resulted in his knowing that Robert Black had been repeatedly asked for a list of residents and that the request had been outstanding at the time of the third TCG meeting at 05.50. That in turn might have prompted Michael Rumble to press harder for the list of residents at the fourth TCG meeting. However, I am satisfied that Nickolas Layton did all he could to ensure that Michael Rumble was aware of the need to obtain the information, even if Michael Rumble's own recollection of events was not as clear.

The LFB's requests for information or action

Request for the attendance of a Dangerous Structures Engineer (DSE)

- 30.103 The LFB requested the attendance of a DSE at 02.17.38, but some hours elapsed before the eventual arrival of the first structural engineer (Amir Fardouee) at the cordon at around 04.30. He was unable to assist and a further delay occurred before John Allen, the RBKC DSE, was able to enter the building and assess its structural integrity at around 06.00. It is necessary to examine the reasons for that delay.
- 30.104 A request for the attendance of a DSE was sent by CU8 to the control room by radio at 02.17.36, but the first call to RBKC was not made until 02.42.38 when AOM Real contacted RBKC using the "admin line" to inform them that a Major Incident had been declared (a matter of which RBKC was already aware).¹³⁴ The reason for that delay is unexplained, but it is possible that it was caused by the pressure on the control room. By the time of AOM Real's call a second request for a DSE had already been sent by CU8 to the control room (at 02.38.21).¹³⁵ When AOM Real reached RBKC the operator asked her whether there was anything she wanted at that moment, but AOM Real did not ask for a DSE to attend. It is unclear why she did not do so, not least because a second service request for a DSE to attend had been created by CRO Angie Gotts only 4 minutes earlier.

¹³² Rumble Day 74/96.

¹³³ Layton Day 74/32/17-35/8.

¹³⁴ [INQ00000188].

¹³⁵ SIL p. 23.

- 30.105 At 03.15.32¹³⁶ CU8 made a third, urgent request to the control room for the attendance of a DSE, which appears to have prompted the control room to pass the request on to RBKC for the first time at 03.17.21,¹³⁷ very shortly after CRO Sharon Darby had created the urgent service request in response to the message from CU8.¹³⁸
- 30.106 The control room repeated its request to RBKC at 03.40.43¹³⁹ and again at 03.48.57.¹⁴⁰ During the first of those calls the RBKC operator was pressed with the urgency of the matter, but could not provide either an estimated arrival time or a direct number for the DSE. During the second call the RBKC operator (Erin) said that she had not been able to contact a DSE and was going to “escalate” the matter.¹⁴¹
- 30.107 It is not clear from the evidence when Amir Fardouee, the RBKC surveyor on call that night, was first asked to attend the incident. It must have been at some time before 04.30, because it was at about that time that David Kerry, RBKC’s Contingency Planning Manager, spoke to him when he was at the police cordon. It is probable that he was contacted by RBKC not long after the call from the control room at 03.48.57.
- 30.108 Nickolas Layton told the Inquiry that he had not been aware of the requests for a DSE until 04.15 when he was asked to call one.¹⁴² It is unfortunate that he did not hear about the request made to RBKC at 03.17.21 or recall AC Roe’s mentioning at the first TCG meeting at 03.20 that a DSE had been requested.¹⁴³ At 03.37 Nickolas Layton called David Kerry, by then in charge of the BECC. David Kerry’s log contains the note “One corner in danger of collapse”.¹⁴⁴ Although Nickolas Layton provided that information to David Kerry, it did not prompt him to ask for a DSE to be sent urgently, but he accepted in evidence that it should have done so.¹⁴⁵
- 30.109 Similarly, when he arrived and spoke to Nickolas Layton at around 03.10, Michael Rumble (who did not attend any of the TCG meetings before 07.10) thought that there might be a risk of the tower collapsing.¹⁴⁶ However, he did not ask for a DSE or suggest that it might be necessary to call one, despite the fact that it was the first item on the list of immediate problems to consider that were identified in the Lambeth LALO pack he was using that night.¹⁴⁷
- 30.110 It was only after the LFB made a direct request to Nickolas Layton at 04.15 to arrange the attendance of a DSE that he called David Kerry to ask for one to attend.¹⁴⁸ It appears that Nickolas Layton had not been informed by the BECC or the RBKC call centre that there had been a number of requests from the LFB for a DSE to attend, let alone that the first request had been made some hours before.¹⁴⁹ Nor could he recall being told even then that the LFB had been calling for a DSE for some time.¹⁵⁰ He did not know at that time that Amir Fardouee was on his way to the cordon and learnt that he was there only when David Kerry called to

¹³⁶ SIL pp. 22-24.

¹³⁷ [INQ00000211].

¹³⁸ SIL p. 24.

¹³⁹ [INQ00000210].

¹⁴⁰ [INQ00000212].

¹⁴¹ [INQ00000212].

¹⁴² Layton witness statement [RBK00029034] p 7, Day 74/45/24-52/24, and Layton log at [RBK00029036] p. 1 item 9 (“DS REQ URGENT BLUE LIGHT 016.15”).

¹⁴³ Thatcher body-worn video clip [INQ00000530]; Layton Day 74/49/15-21.

¹⁴⁴ Kerry Log [RBK00028849].

¹⁴⁵ Layton Day 74/50/5-51/3.

¹⁴⁶ Rumble Day 74/105/3-8, 134/2-135/3.

¹⁴⁷ [RBK00029039] p. 6; Rumble Day 74/133/4-134/1.

¹⁴⁸ Layton witness statement [RBK00029034] pp. 7-8 and Day 74/46/3-52/9.

¹⁴⁹ Layton Day 74/46/7-47/24.

¹⁵⁰ Layton Day 74/52/10-19.

tell him so at 04.31.¹⁵¹ At the second TCG meeting at 04.34, Commissioner Dany Cotton drew attention to the fact that the LFB had been asking for the attendance of a DSE for the past two hours and that one was then en route.¹⁵² That was the first that Nickolas Layton had heard of any earlier requests.¹⁵³ However, although he had just been told that Amir Fardouee was at the cordon, he did not tell the Commissioner that a structural expert was already at the scene.¹⁵⁴ He was unable to explain why he had failed to pass on that important piece of information to the LFB.¹⁵⁵

- 30.111 The confusion surrounding the response to the request for a DSE to attend at the incident ground demonstrates a worrying failure of communication between RBKC and the LFB. The LFB should have made its request to RBKC for the attendance of a DSE an hour earlier than it did and the request, when it finally was made, did not result in the attendance of a structural engineer until 04.30. The LALOs, for their part, had not picked up the need for the urgent attendance of a DSE, despite its having been raised at the first TCG meeting and, in the case of Michael Rumble, despite his own recognition that the building might collapse. Nickolas Layton was unable to explain why he did not tell Commissioner Cotton that a DSE was already at the cordon, particularly in the light of his evidence that at around 04.30 he had seen Amir Fardouee and a person he thought was John Allen near CU8 talking to the LFB.¹⁵⁶
- 30.112 These deficiencies suggest the need for standardised instruction manuals to be provided for use by LALOs at large-scale incidents instead of leaving it up to individual local authorities to decide how to prepare and equip them. They also indicate the need for far better direct communication between fire and rescue services and local authorities and for LALOs to take a more active role in ascertaining and meeting the needs of the lead responder. It is easy to understand the natural desire of a LALO not to get in the way of the emergency services, particularly at such an horrific event, but LALOs play an important role in supporting them and must be ready to obtain vital information and make sure it reaches the person who needs it.
- 30.113 In the event, although GM Dave O'Neill, Sector Commander Safety, had been advised by John Allen by telephone that the building had two to four hours' fire protection,¹⁵⁷ Amir Fardouee was too traumatised by events at the scene of the fire to enter the tower and carry out a structural inspection (for which he cannot be criticised.) Although the advice from John Allen was communicated by GM O'Neill to AC Roe at 05.32,¹⁵⁸ John Allen did not arrive at the scene until around 06.00. He was quickly taken to the building, where he carried out an inspection to establish whether the central core was intact. He was able to provide his initial advice to AC Roe at around 06.13.¹⁵⁹
- 30.114 Poor communications both within the LFB and between the LFB and RBKC meant that there was an unacceptable delay between the first request by CU8 for a DSE at 02.17.36¹⁶⁰ and AC Roe being personally briefed by the DSE at 06.13. The whole point of obtaining advice from a DSE who had personally viewed the building was to enable the incident commander

¹⁵¹ Kerry Log [RBK00028849] p. 4.

¹⁵² Roe Log [MET00005404] p. 3.

¹⁵³ Layton Day 74/57/6-8.

¹⁵⁴ Kerry Log [RBK00028849].

¹⁵⁵ Layton Day 74/58/1-4.

¹⁵⁶ Layton Day 74/53/15-55/7. It is more likely that John Allen was not in fact there at that time.

¹⁵⁷ O'Neill Day 51/47/14-20.

¹⁵⁸ Roe Log [MET00005404] p. 4.

¹⁵⁹ Roe Log [MET00005404] p. 5.

¹⁶⁰ SIL p. 22.

and other emergency services to know whether it was at imminent risk of collapse. Such information would inevitably affect the incident commander's strategy and that of the other emergency services.

- 30.115 AC Roe's evidence was that the delay in the DSE's arrival had not affected his plan or his understanding of the stability of the building, because he took the view that DSEs are invariably cautious, whereas LFB commanders are prepared to accept greater risks and prefer to rely on their own professional judgement when deciding whether to commit firefighters to a potentially dangerous building.¹⁶¹ However, that is an approach which should be treated with scepticism, since it overestimates the ability of frontline firefighters, even senior commanders, to understand the behaviour of complex building structures. Firefighters are not structural engineers or construction professionals and do not have the training needed to understand the response to fire of complex buildings constructed using modern materials. This was, indeed, a point that Commissioner Cotton was at pains to make in the course of her evidence.¹⁶² What is more, if the opinion of a DSE about whether a building was at risk of collapse was not something that an incident commander would place firmly at the centre of their strategy, it is most unlikely that CU8 would have made repeated requests for a DSE throughout the night; and it is most unlikely that Commissioner Cotton herself would have demanded a DSE in such strenuous terms at the second TCG meeting, emphasising the long delay that had already occurred in summoning one. The extraordinary nature of the Grenfell Tower incident and the very fact that urgent requests for the attendance of a DSE were made throughout the night suggest that advice about the structural integrity of the building was regarded by the LFB as important.
- 30.116 In the final analysis, the absence of a DSE until after 06.00 did not affect AC Roe's decisions because his plan was to continue to commit crews into the tower unless and until he was told that there was real doubt about the structural integrity of the building. His strategy was supported by the assessment of GM O'Neill, at 05.32, that there was no concern about total collapse.¹⁶³ AC Roe's strategy was admirable as an example of willingness to commit firefighters in an attempt to save lives, even when the risks to their safety were high, but as it turned out, the risks were in fact not as serious as was feared. In that respect the LFB was fortunate. However, the long delay in the arrival of a DSE in this case is not excused by the fact that it had no serious consequences. In another major building fire delay of that kind could have proved disastrous.

The request for a list of residents

RBKC's role

- 30.117 Shortly after the second TCG meeting at 04.34 and before the third TCG meeting at 05.50 Nickolas Layton was asked by the LFB for a list of residents of Grenfell Tower. Immediately after receiving the request he asked Robert Black for the information because he believed that he would either have it or could get it. He chased Robert Black for this information three times during the course of the night, but when he left the incident at 07.00 he had still not received it.¹⁶⁴ He asked Robert Black for the information rather than David Kerry because he thought that RBKC would not have a full list of residents, since it was not managing the tower; he assumed that only the TMO would have it.¹⁶⁵ It is not clear from the evidence whether

¹⁶¹ Roe Day 49/194/13-195/15.

¹⁶² Cotton Day 50/84/14-87/6. That was in the context of dismissing as impracticable the requirement for firefighters to examine some aspects of a building's construction when carrying out an inspection under section 7(2)(d) of the FRA.

¹⁶³ Roe Log [MET00005404] p. 4.

¹⁶⁴ Layton Day 74/64/4-69/13.

¹⁶⁵ Layton Day 74/69/14-16.

RBKC did in fact have a complete list of current residents and therefore it is not possible to say whether, if Nickolas Layton had approached RBKC earlier, he would have been able to obtain a list of residents sooner than he did.

- 30.118 Although the account given by Nickolas Layton in his witness statement and in his oral evidence to the Inquiry was not fully reflected in his original evidence to the MPS or in his contemporaneous notes, it is clear that he did ask Robert Black repeatedly for a full list of residents of Grenfell Tower and not only for a list of residents at the rest centres. The TMO had been asked for such a list and had provided it to Robert Black and he knew at least after the third TCG meeting that the LFB wanted to compare the names of those who were at the rest centres with a full list of residents so that it could identify who was missing.

The TMO's role

- 30.119 Robert Black held an important position, both as Chief Executive of the TMO and as the primary point of contact between the TMO and the LFB at CU8. As Chief Executive he either had, or should have had, ready access to important information about the Grenfell Tower and its residents. He was present at the incident from around 03.30 and waited outside CU8 in order to be able to speak to the LALOs or the LFB as necessary. However, despite being the link between the TMO and the LALO, Robert Black played an essentially passive role and failed to display effective leadership. I recognise, however, that the RBKC Contingency Plan did not require him to act in a formal capacity, at an incident such as the Grenfell Tower fire and that omission may have contributed to his lack of leadership. However, the lack of a formal role designated by RBKC does not explain why, by his own account, he did not oversee any of his staff in their roles and did not get involved in collecting information about residents who had survived. His recollection was very limited and, although he accepted that while he had been present at the command unit he might have overheard requests for information about the building and its occupants being made by the LFB and the MPS, he was not sure whether he could obtain it, or if he could, how to get it to the scene.¹⁶⁶ Robert Black said that he had not become involved in understanding the system set up by his staff to identify survivors to assist the LFB. He left that task to Teresa Brown who was collecting information and could provide it.¹⁶⁷ He placed a heavy burden on Teresa Brown, leaving her to obtain a list of residents of the tower for the purpose of use at the rest centres while she was also under enormous pressure to establish them. I take account of the fact that she was assisted by a team from the TMO, but that does not detract from the conclusion that Robert Black remained essentially detached.
- 30.120 In particular, Robert Black did not ensure that important emails were forwarded to the LALO or the LFB, assuming (but never checking) that Teresa Brown had done it. One striking example is provided by the emails sent to him by David Noble at 06.24 and 06.38 containing the list of residents as at 30 May 2017.¹⁶⁸ Robert Black failed to pass on either of them to the LALO or the LFB until 07.56. His reasons for not acting sooner were that in the first email the LFB had not asked for the information and that he assumed that Teresa Brown would send on the second email. His evidence displayed a lack of direction on his own part and an almost casual assumption that someone else would take responsibility for doing what needed to be done.

¹⁶⁶ Black Day 74/181/17-183/23.

¹⁶⁷ Black Day 74/175/11-177/14.

¹⁶⁸ Emails contained in a chain of emails [TMO10031176]. The email of 06.38 is marked as sent at 05:38 but for technical reasons the time is shown as GMT and not BST. The position is less clear for the email marked as sent at 05:24 but it is possible that this was in fact also sent at 06.24 for the same reasons.

- 30.121 Teresa Brown for her part was more active in taking responsibility for collating information at St Clement's Church. As requests for information were referred to her, a direct line of communication appears to have evolved between her and the LFB. She said that she had spoken to the LFB and had initially provided sheets of handwritten notes to LFB officers Chris Line and Vincent Bell until a colleague bought a laptop enabling an electronic list to be kept.¹⁶⁹ Despite this direct line of communication, she did not forward to the LFB the emails sent by David Noble¹⁷⁰ at 06.24 and 06.38 containing the list of residents of the tower, because she had assumed (quite fairly) that Robert Black had sent them on.¹⁷¹ He eventually did so at 07.56.¹⁷²
- 30.122 During the fourth TCG meeting at 07.10, Michael Rumble was asked for a floor plan of the tower and a copy of the electoral roll.¹⁷³ Following the meeting, he asked the TMO for a list of residents. He made a request through the BECC for a copy of the electoral roll but was unable to say what had come of the request. Teresa Brown provided him with a hard copy list of residents before 11.00. He asked her to email it to the LFB and provided a specific email address for that purpose. He said that that had all happened just before the TCG meeting at 11.00.¹⁷⁴
- 30.123 The delay in providing the LFB with a list of residents was unacceptably long. It was caused by an unjustifiable failure on the part of Robert Black to appreciate its importance to the LFB and to act upon the repeated requests from Nickolas Layton for the information. He appears simply to have assumed that Teresa Brown would deal with it, but without actually checking with her that she had done so. She for her part assumed that Robert Black was dealing with it, which in the circumstances was not entirely unreasonable of her. The result was that despite pressure from the LALO to obtain the information, the request fell between the cracks and the information was not provided until many hours later.

Plans of the building

RBKC's role

- 30.124 An enduring feature of the incident was that the LFB had no floor plans or drawings of the tower. There was no information of that kind on the ORD and the building had no premises information box. These fundamental failings by the LFB and the TMO¹⁷⁵ have been addressed at Chapter 27 of the Report. The consequence was that the LFB was forced to seek plans from the LALO and from the TMO, but could only do so once the relevant staff had arrived.
- 30.125 The evidence is not entirely clear about when the LFB started asking for plans of the building. Nickolas Layton's evidence was that he had not been asked about the layout of the tower or for detailed plans at any point. He did not have any record of this request being made during any of the TCG meetings he had attended and said that he did not overhear any requests for plans.¹⁷⁶ Indeed, there is no record by anyone else of such a request having been made at any of the TCG meetings he attended before he left the scene at 07.00, either in the Roe Log¹⁷⁷ or elsewhere. On the other hand, as was recorded by Inspector Thatcher's body-worn video

¹⁶⁹ Brown Day 75/58/17-60/3, 78/12-80/21 and Brown witness statement [TMO10048960] p. 3.

¹⁷⁰ A TMO policy officer helping with the "customer relations team"; Brown Day 75/83/8-15.

¹⁷¹ Brown Day 75/89/21-91/22.

¹⁷² [TMO10031176].

¹⁷³ Rumble Day 74/114/15-23.

¹⁷⁴ Rumble Day 74/124/10-130/22.

¹⁷⁵ As I have pointed out in Chapter 27, the TMO was not legally obliged to provide a premises information box, and they were not common in high-rise buildings.

¹⁷⁶ Layton Day 74/74/7-75/20.

¹⁷⁷ [MET00005404].

recorder, AC Roe told those present at the fourth TCG meeting at 07.10¹⁷⁸ that he had been asking for plans for “a very long time” and that the continuing failure to provide a full set of plans would be recorded as a “major deficiency”.

- 30.126 On balance, I think that AC Roe probably had asked someone to obtain plans of the tower before the fourth TCG meeting at 07.10 but that he had done so in a less formal context than the earlier TCG meetings which Nickolas Layton had attended. The entry in the Roe Log at 06.13¹⁷⁹ refers to the attendance of the DSE, John Allen, and notes that he “will attempt to locate plans”. There is also an email shortly afterwards at 06.16 in which Robert Black forwarded to John Allen an email which he had received at 06.14 from David Noble with the subject “Fwd: Fire access plans from the refurb” with two attachments entitled “fire access” and “fire strategy”.¹⁸⁰ Although Robert Black said that he could not remember why he sent plans to John Allen, it seems very likely, in view of the timing of the messages, that he had been asked to do so.¹⁸¹ It remains unclear when the first request for plans was made; it may not have been as long before the fourth TCG meeting as AC Roe thought.
- 30.127 There appears to have been some confusion about the supply of plans to the LFB. John Allen had no recollection of receiving the email from Robert Black timed at 06.16.¹⁸² He was clear that he had not forwarded it to the LFB and the fact that he did not receive it may explain why he returned to the RBKC Town Hall to search for plans of the building, returning with them between 07.45 and 08.00. On the other hand, Michael Rumble, who attended the fourth TCG meeting at 07.10, said that he had been made aware at about that time that Robert Black had a copy of the plan of one floor of the building on his phone. After the meeting he relayed the request to Robert Black. He saw Robert Black speaking to an LFB officer and he believed that he had sent the plans to the LFB by email (although he never saw any plans himself).¹⁸³ Plans of the building had been provided to the LFB before the next TCG meeting at 08.45.¹⁸⁴ For his part, when John Allen returned to CU8 between 07.45 and 08.00 with the plans he noticed that the LFB already had the plans that he was about to give them up on a screen inside CU8.¹⁸⁵ As a result, he did not provide further copies.¹⁸⁶
- 30.128 I think it likely that the LFB were provided with plans of the building between 07.35, when the fourth TCG meeting ended,¹⁸⁷ and around 08.00. The evidence suggests that the plans were probably provided by the TMO, although RBKC had by then been able to find them in its files. It would therefore have been able to make them available at about the same time, but not any earlier.

The TMO's role

- 30.129 The TMO was unable to obtain accurate information about the layout of Grenfell Tower with any speed. It is apparent that one of its employees, David Noble, who was assisting remotely, had accessed the emergency plan and sent a “cut and paste” version of its contents to Teresa Brown and two other members of staff, Janice Wray and Nicola Bartholomew.¹⁸⁸ The section of the emergency plan containing details of the properties managed by the TMO was

¹⁷⁸ [INQ00000518].

¹⁷⁹ Roe Log [MET00005404] p. 5.

¹⁸⁰ [RBK00001468].

¹⁸¹ Black Day 74/213/4-7.

¹⁸² Email [RBK00035692]; Allen second witness statement [RBK00035691] p. 9.

¹⁸³ Rumble witness statement [RBK00029037] p. 6 and Day 74/117/7-121/19.

¹⁸⁴ Roe Log [MET00005404] p. 8.

¹⁸⁵ [LFB00001968] pp. 49, 51.

¹⁸⁶ Allen second witness statement [RBK00035691] p. 9.

¹⁸⁷ Roe Log [MET00005404] p. 7.

¹⁸⁸ [TMO10031176].

intended to include important information about the buildings, including information useful to the emergency services. That included a specific section to which plans of the buildings were to be attached. However, in the case of Grenfell Tower that was blank. There was clearly a system in place which could have assisted the emergency services, if the information had been regularly reviewed and kept up to date, but regrettably that had not been done.

- 30.130 There is no evidence to suggest that David Noble's email timed at 06.03 containing this inaccurate and obsolete information was forwarded to the LFB, and they did not rely on it. However, Graham Webb, who was part of the TMO leadership team and attended the incident at a later time, said that the TMO also kept an asset register which held structural plans of the building. This system was managed by the TMO asset team, but anyone who had the necessary approval could obtain access to the information and send it to the LFB as an attachment to an email.¹⁸⁹
- 30.131 Graham Webb's evidence raises concerns about why the TMO failed to keep the relevant section of the emergency plan up to date and why at the time of the incident its employees were able to gain access to out of date information about the building but not, as it seems, to up-to-date and readily accessible information about it. It also raises the question whether RBKC maintained a similar asset register and if not, whether it should have done so.

¹⁸⁹ Webb Day 75/24/10-25/6.

Chapter 31

Isolating the Tower from the Gas Supply

- 31.1 Gas was supplied to the tower by Cadent Gas Ltd (Cadent). At 03.22 on 14 June 2017 the LFB contacted the Gas Emergency Call Centre and asked Cadent to attend.¹ By 03.50 an Emergency Response Team from Cadent was present at the incident.² Between 04.30 and 05.00 they reported to the LFB command unit on Bramley Road and were told to stand by and await further instructions. At all material times Cadent was a Category 2 responder within the meaning of Part 3 of Schedule 1 to the CCA and as such had an obligation to assist the LFB in the performance of its duties under the Act. In practice, that meant that Cadent was required to support the LFB by cutting off the gas supply to the tower when required to do so.
- 31.2 Jason Allday, a Level 7 Network Engineer and member of Cadent's Emergency Response Team, gave written and oral evidence describing the operations that were carried out in order to shut off the supply of gas to the tower.³ A number of written statements from Cadent personnel also addressed that topic.⁴
- 31.3 Although Jason Allday was not on standby for the Emergency Response Team that night, he attended the incident because he was very familiar with the area as a result of his involvement in gas repair work on Bramley Road near to the tower. He had also attended training in managing an emergency incident in conjunction with other emergency services, including the LFB. Having seen news reports about the fire in the early hours of 14 June, he realised that his assistance would be required and decided to attend the incident.⁵ He reached the incident ground at around 07.20 and, after gathering key information about the situation and the resources available to him,⁶ reported to CU8, where he was told that the LFB wanted the gas supply to the tower to be cut off.⁷
- 31.4 In principle there were three methods by which that might be achieved: (1) by closing the pipeline isolation valves (PIVs) immediately outside the perimeter of the tower, (2) by shutting off the gas governors serving the local area and (3) by cutting the gas mains in the streets adjacent to the tower. In the event, neither of the first two methods could be adopted. PIVs are normally located within one or two metres of the building they serve and in this case they were completely inaccessible due to falling debris.⁸ The gas governors are pressure-reducing valves within the gas network⁹ which operate, in effect, like taps, so that if one is closed the others open more widely in order to maintain the pressure in the system. It would have been necessary to close at least 10 governors in order to shut off the gas supply to the tower and it would also have been necessary to place physical isolations behind each of them.¹⁰ In those circumstances, Jason Allday and his team quickly rejected that option.¹¹

¹ [CAD000000002].

² [MET00007821] p. 2; [MET00007956] section 20.

³ Day 73; [MET00012710]; [CAD00003018].

⁴ Read into the record on Day 73 (14 November 2018) <https://www.grenfelltowerinquiry.org.uk/hearings/evidence-cadent-gas-ltd-and-bsrs>

⁵ Day 73/14/17-15/18.

⁶ Day 73/30/15-24.

⁷ Day 73/31/2-32/10.

⁸ Day 73/32/20-36/9.

⁹ Shown in Exhibit JMA/3 [CAD00003012].

¹⁰ Day 73/37/14-42/14.

¹¹ Day 73/41/25-42/7.

- 31.5 The third method, which involved cutting and sealing the pipes supplying gas to the area of the tower at suitable points in streets nearby, was therefore chosen as the best option for isolating the tower. There were three gas mains serving the area of the tower and it was therefore necessary to cut all three in order to achieve complete isolation.¹² By using a combination of electric laptop devices (known as “Go-Books”) and hard copy maps, Jason Allday and his team identified three locations, on Grenfell Road, Testerton Walk and Station Walk respectively, at which it was safe to excavate the roadway and expose the pipes for work to be carried out on them.
- 31.6 The pipes beneath Testerton Walk and Station Walk were both made of ductile iron. In order to stop the flow of gas in metal pipes of up to 12 inches in diameter, a “bagging off” system is used, which involves drilling six holes in each pipe, three on either side of the point at which it is intended to make the cut, inserting four air bags and inflating them to create a seal and creating a bypass line to check that the flow of gas has ceased. Once a tight seal has been created, the pipes can be cut and capped.¹³ The pipe beneath Grenfell Road was made of polyethylene. Pipes of that kind can be compressed using a special tool to cut off the flow of gas to enable the pipe to be cut and capped off.
- 31.7 At 08.50 Jason Allday discussed with the LFB safety officers his proposal to cut the three gas mains and obtained their approval to do it. He said that until that time cutting off the gas supply to the tower had not appeared to be a priority for the LFB, given the more immediate pressures of fighting the fire and attempting to save life.¹⁴ No concerns were raised by the LFB at that time about the possibility that gas could be fuelling the fire or reigniting sections of the tower.¹⁵
- 31.8 It was not until later in the day, at some time between 14.00 and 15.00, that Jason Allday became aware that the LFB was concerned about gas burning inside the tower,¹⁶ when orange flames, which appeared to be fed by gas, could be seen in some compartments.¹⁷ That was consistent with his own view that it was not until that stage that gas had been contributing to fires in the tower.
- 31.9 At around 14.00 Jason Allday was asked by the LFB for the first time whether there were any valves in the building which could be used to shut off the gas. After consulting his colleagues, he explained that there were four risers in the building serving the residential flats, with a separate gas supply for the communal boilers.¹⁸ The LFB asked him whether he was prepared to go into the basement to try to operate the valves to shut off the risers. That was the first time he had considered entering the basement because up to that point burning debris falling from the building had made it impossible to approach it.¹⁹ At around 15.50, Jason Allday and Patrick Kelly, a member of the contract management team at Cadent, approached the basement together with three LFB officers. In order to gain access to the entrance door on the east side of the tower, they were escorted by LFB officers carrying riot shields to protect them against the risk of falling debris.

¹² As shown in Exhibit JMA/1 [MET00012914] at points 3, 4 and 5 on the map.

¹³ Day 73/72/4-73/22.

¹⁴ Day 73/62/18-65/3 and [MET00012710] section 38.

¹⁵ Day 73/65/4-10.

¹⁶ Day 73/66/12-16, 81/24-82.

¹⁷ Day 73/108/9-109/3.

¹⁸ Day 73/92/19-24.

¹⁹ Day 73/82/10-19.

- 31.10 Once inside the basement Jason Allday was able to identify three of the four gas risers, which were located in the corners of the room with valves at a high level,²⁰ but conditions in the building prevented him from carrying out anything more than a cursory inspection. There was a significant quantity of water present and he realised that the electricity was still on, which immediately gave him cause for concern. Apart from that, after no more than 5 minutes, the LFB advised everyone to leave the building because there were fears that it was about to collapse. In those circumstances it was not possible for him to try closing the valves, which would have involved taking ladders down into the basement to enable people to climb up to them. The risk to life posed by the conditions in the basement made that impossible.²¹ (When later that evening at around 20.15 the LFB asked Jason Allday to consider re-entering the basement, he declined to do so in view of the serious risks to safety, a decision which was supported by his line manager, Tony Day.)²²
- 31.11 The team from Cadent therefore turned their attention to cutting off the supply of gas at the locations that had been identified in Grenfell Road, Testerton Walk and Station Walk. They had difficulty gaining access to the excavation sites in Grenfell Road and Testerton Walk because both were brought within the inner exclusion safety cordon around the tower when it was extended during the afternoon. In addition, the activities of other emergency services made it difficult to bring the vehicles and equipment needed to carry out the excavations into the area.²³ As a result, part of the excavation had to be carried out by hand at both sites and at one stage the Cadent team had to pull back when it was considered too dangerous to remain within the inner cordon because of fears for the stability of the building. Work could continue only with the help of a team of LFB “spotters” who were deployed to watch for signs of instability in the tower. Jason Allday described a number of tense moments when difficult decisions had to be taken on whether it was safe to carry on with the work.²⁴ In the event, excavations in both locations started at around 14.30 and the work was completed by 20.00 that evening.
- 31.12 The work to cut the gas main on Station Walk also proved difficult. Both the Go-Book electronic map and the paper maps showed it as a 12-inch main, which was consistent with the size of pipe marked as branching off the nearby governor at Latimer Road.²⁵ However, after some difficulty finding the pipe (five attempts were needed to locate it and it lay deeper in the ground than had been expected),²⁶ the team from Cadent discovered that the pipe was in fact 15 inches in diameter. They did not have the proper equipment to isolate a main of that size, but they decided to adopt an improvised method which involved over-inflating the air bags designed for use on a 12-inch pipe. That enabled them to avoid waiting for a specialist subcontractor to arrive, which would have caused further delay. In the event, their plan was successful and at 23.40 the flow of gas to the building ceased. In the early hours of 15 June a more permanent solution was achieved with the assistance of Cadent’s specialist subcontractor.²⁷

²⁰ Day 73/92/9-14.

²¹ [MET00012710] section 57.

²² Day 73/95/7-96/14; [MET00012710] section 64.

²³ [MET00012710] sections 47-49.

²⁴ Day 73/96/25-100/5.

²⁵ Day 73/50/22-62/17, 103/1-104/22.

²⁶ Day 73/76/18-80/15.

²⁷ [MET00012710] sections 66-73; Day 73/100/11-107/10, 111/8-112/7.

- 31.13 When the gas was cut off at 23.40, Jason Allday described seeing the flames in the tower die down almost immediately,²⁸ demonstrating the contribution that gas had been making to the fires at that time. He remained on hand to supervise the permanent work on the pipe beneath Station Walk and eventually left at 07.15, having been on site for around 24 hours.²⁹
- 31.14 There can be no doubt that the Cadent team did an excellent job in finding the local gas mains and cutting off the supply of gas to the tower. They succeeded in completing a challenging task over a long period of time in difficult and sometimes dangerous conditions. Their success was to a large extent due to Jason Allday's inspirational leadership, clarity of planning and careful execution.

²⁸ [MET00012710] section 72; Day 73/107/11-108/8.

²⁹ [MET00012710] sections 72-74; Day 73/111/23-112/7.

Part IV

Remembering those who died

Chapter 32

Remembering Those Who Died

1 Introduction

- 32.1 Everyone who has had anything to do with this Inquiry has been reminded day by day that 70 people failed to escape from the building and lost their lives as a result. A child was later stillborn as a result of the trauma suffered by his mother in the course of her escape and another resident, Maria del Pilar (Pily) Burton, who had escaped from the burning building, died some months later in hospital.
- 32.2 Between 21 and 30 May 2018 a series of hearings took place at the Millennium Gloucester Hotel in Kensington to commemorate those who had died, to hear evidence about them as individuals, friends and neighbours and to celebrate their lives and their contributions to the wider local community.
- 32.3 It is fitting that this report should not only name each of those who died but should celebrate their lives as individuals, drawing on the evidence given by loved ones and friends at the commemoration hearings and in witness statements made to the Inquiry. No summary of the moving tributes delivered during those hearings could hope to do full justice to the memory of those who were lost in the fire, but I hope that this chapter, which forms part of the permanent public record of these proceedings, will bring some comfort to those who knew and remember them. Some bereaved relatives did not feel able to commemorate those whom they had lost publicly at those hearings, but in order that the record may be complete, and in accordance with what I understand to be the wishes of their relatives, I set out brief details of the person who died.
- 32.4 The following people died in the building, or following attempts to escape from it. I list them in the order in which their names were read by Bernard Richmond QC at the end of the commemoration hearings and the flats in Grenfell Tower which were their homes:

Floor 23

Fathia Ahmed Elsanousi	(Flat 206)
Abufiras Mohamed Ibrahim	(Flat 206)
Isra Ibrahim	(Flat 206)
Mohammed Amied (Saber) Neda	(Flat 205)
Hesham Rahman	(Flat 204)
Rania Ibrahim	(Flat 203)
Fethia Hassan	(Flat 203)
Hania Hassan	(Flat 203)
Marco Gottardi	(Flat 202)
Gloria Trevisan	(Flat 202)
Raymond Herbert (Moses) Bernard	(Flat 201)

Floor 22

Eslah Elgwahry	(Flat 196)
Mariem Elgwahry	(Flat 196)
Anthony Keith Disson	(Flat 194)
Bassem Choukair	(Flat 193)
Nadia Choucair	(Flat 193)
Mierna Choucair	(Flat 193)
Fatima Choucair	(Flat 193)
Zainab Choucair	(Flat 193)
Hashim Kedir	(Flat 192)
Nura Jemal	(Flat 192)
Yahya Hashim	(Flat 192)
Firdaws Hashim	(Flat 192)
Yaqub Hashim	(Flat 192)
Sirria Choucair	(Flat 191)

Floor 21

Abdulaziz El Wahabi	(Flat 182)
Faouzia El Wahabi	(Flat 182)
Yasin El Wahabi	(Flat 182)
Nur Huda El Wahabi	(Flat 182)
Mehdi El Wahabi	(Flat 182)
Ligaya Moore	(Flat 181)

Floor 20

Jessica Urbano Ramirez	(Flat 176)
Omar Belkadi	(Flat 175)
Farah Hamdan	(Flat 175)
Malak Belkadi	(Flat 175)
Leena Belkadi	(Flat 175)
Mary Ajayi Augusta Mendy	(Flat 173)
Khadija Saye	(Flat 173)
Victoria King	(Flat 172)
Alexandra Atala	(Flat 172)

Floor 19

Mohamednur Tuccu	(Flat 166)
Amal Ahmedin	(Flat 166)
Amaya Tuccu Ahmedin	(Flat 166)
Amna Mahmud Idris	(Flat 166)
Majorie Vital	(Flat 162)
Ernie Vital	(Flat 162)
Debbie Lamprell	(Flat 161)
Gary Maunders	(Flat 161)

Floor 18

Berkti Haftom	(Flat 155)
Biruk Haftom	(Flat 155)
Hamid Kani	(Flat 154)
Isaac Paulos	(Flat 153)
Sakina Afrasehabi	(Flat 151)
Fatemeh Afrasiabi	(Flat 151)

Floor 17

Vincent Chiejina	(Flat 144)
Khadija Khalloufi	(Flat 143)
Kamru Miah	(Flat 142)
Rabeya Begum	(Flat 142)
Mohammed Hamid	(Flat 142)
Mohammed Hanif	(Flat 142)
Husna Begum	(Flat 142)

Floor 16

Joseph Daniels	(Flat 135)
Sheila	(Flat 132)

Floor 15

Steven (Steve) Power	(Flat 122)
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Floor 14

Zainab Deen	(Flat 115)
Jeremiah Deen	(Flat 115)
Mohammad Alhajali	(Flat 112)
Denis Anthony Peter Murphy	(Flat 111)

Floor 11

Ali Yawar Jafari	(Flat 86)
Abdeslam Sebbar	(Flat 81)

- 32.5 Logan Gomes was delivered stillborn on 14 June 2017. Pily Burton was evacuated from her flat with the assistance of firefighters. She died in hospital on 29 January 2018.
- 32.6 I turn now to the individual deceased in the order set out above.

2 Floor 23

Fathia Ahmed Elsanousi, Abufras Ibrahim and Isra Ibrahim (Flat 206)

- 32.7 Isra Ibrahim lived in Flat 206 with her mother, Fathia Ahmed Elsanousi. Abufras Ibrahim, the son of Fathia Ahmed Alsanousi, was visiting his mother and sister on 14 June 2017.

Fathia Ahmed Elsanousi

- 32.8 Fathia Ahmed Elsanousi was born in 1940 in Al Nuhood, a town in the West Kordofan province of Sudan.¹ Fathia married a military officer, who died in 1984.² Fathia was the mother of two daughters and three sons.³ She was 77 years old at the time of the fire.
- 32.9 On 24 May 2018, Fathia's friend, Wafa Osman, read in both English and Arabic a commemoration of her friend on behalf of Fathia's younger sister, Hayat Elsanosi.⁴ Wafa also shared some of her memories of Fathia. On 29 May 2018 Fathia's son, Abu Baker Ibrahim, presented his commemoration.⁵
- 32.10 As a young woman living in Sudan, Fathia trained to be a school teacher. A successful educator, she rose to become headmistress of a primary school. Fathia moved to the Sudanese capital, Khartoum. After her husband died, she lived on a farm outside the city, rearing chickens and growing cattle feed. At that time she was still teaching and raising her children. Fathia was also a mother figure for her sister Hayat. Hayat suffered serious injuries at the age of 13 during a fire and Fathia was a key figure in supporting her through her education and into work.⁶
- 32.11 Two of Fathia's children left Sudan to study in eastern Europe and in the 1990s she decided to move with her family to the United Kingdom to escape the civil war in Sudan. She made her life in London, becoming a British citizen in about 2000. She moved to Flat 206 in 2007. Fathia was remembered as a lynchpin of the Sudanese community in Kensington and Chelsea. Drawing on her professional background, she helped to establish and run the Azza Supplementary School, which has the aim of educating children of Sudanese origin in Kensington and Chelsea to understand their heritage as well as British culture.⁷
- 32.12 Fathia would visit her family in Sudan on a regular basis and was able to have a house built for her sister Hayat, where she would stay on her long visits home. Fathia was skilled at cooking, jewellery-making and sewing. She had been taught to sew as a young woman by Italian nuns. Fathia will be remembered by her family and friends as a loving mother, an educator committed to her community and a welcoming host who always had a tin of Quality Street available.⁸

Abufiras Mohamed Ibrahim

- 32.13 Abufiras Mohamed Ibrahim was born on 8 January 1978. He was 39 years old at the time of the fire. In June 2017, he was living with his brother, Abu Baker Ibrahim, who gave a commemoration for him on 29 May 2018.⁹
- 32.14 Abufiras was known as Fras to his friends and family. He was described as a tough man with a very soft centre. He cared very deeply about his family. Abu Baker recalled a time when he was unwell and Fras looked after him. Abu Baker woke up in the middle of the night to find Fras awake sitting by the window, watching over him.¹⁰

¹ Commemoration hearing 24 May 2018 [CH4/33/8].

² Commemoration hearing 24 May 2018 [CH4/36/6].

³ Commemoration hearing 29 May 2018 [CH6/88/23-89/5].

⁴ Commemoration hearing 24 May 2018 [CH4/31/10-13].

⁵ Commemoration hearing 29 May 2018 [CH6/88/12-16].

⁶ Commemoration hearing 24 May 2018 [CH4/33/19-34/18].

⁷ Commemoration hearing 24 May 2018 [CH4/32/1-25-33/2]; Commemoration hearing 29 May 2018 [CH6/89/19-90/20].

⁸ Commemoration hearing 24 May 2018 [CH4/35/3-14]; Commemoration hearing 29 May 2018 [CH6/90/17-23].

⁹ Commemoration hearing 29 May 2018 [CH6/90/7-11].

¹⁰ Commemoration hearing 29 May 2018 [CH6/92/23-93/19].

- 32.15 Fras loved to cook for his family and was due to start working at the fishmonger's business that Abu Baker ran. He was remembered as a brave man who would put the welfare of others before that of himself.¹¹

Isra Ibrahim

- 32.16 Isra Ibrahim was born on 8 August 1983. She was 33 years old.
- 32.17 Remembering his sister on 29 May 2018, Abu Baker Ibrahim described her as a loving and compassionate person. She carried those qualities into her working life where she helped to care for elderly people, reflecting her altruistic nature.¹²
- 32.18 On 30 May 2018, Said Essaouini delivered his commemoration for Isra. He was Isra's partner; they had met in 2014. He described Isra as having a very strong faith in God and taking religion very seriously. She would wake early to perform an extra hour of morning prayers.¹³
- 32.19 Isra was a very generous person, often donating money to people whom she thought needed it more than she did. Her last job was as a salesperson and she also spent time working at the St Charles Hospital caring for elderly people.¹⁴
- 32.20 Fit and healthy, Isra enjoyed spending time outdoors. She enjoyed trips out of London and would often visit Brighton. She loved Regent's Park, feeling it was a place where she could get away from the world.¹⁵
- 32.21 Isra enjoyed cooking Sudanese food for her friends and family and loved her family above all.¹⁶

Mohammed Amied (Saber) Neda (Flat 205)

- 32.22 Mohammed Amied (Saber) Neda lived with his wife Flora (Shakila) Neda and son Shekab (Farhad) Neda in Flat 205. His friends and family knew him as Saber.
- 32.23 Saber Neda was born on 3 May 1960 in Afghanistan. He was 57 years old at the time of the fire. On 21 May 2018, commemorations for Saber were presented on behalf of his brother Aref, his son Farhad and his wife Flora.
- 32.24 One of 10 children, Saber grew up in Afghanistan. He and Flora met in 1989 in Kabul when he was 28 and she 26 years old. At the time he was a high-ranking officer in the Afghan army and had just returned from Czechoslovakia where he had spent two years training. Saber and Flora married in 1991 in Kabul and were husband and wife for over 27 years. Flora recalled the pride and joy Saber felt when their son Farhad was born in 1993.¹⁷
- 32.25 Saber and his family left Afghanistan in 1998 because of the risk they faced from the Taliban. He was targeted as an army officer and Flora was no longer able to work as a primary school teacher. The family were able to claim asylum in the United Kingdom.¹⁸

¹¹ Commemoration hearing 29 May 2018 [CH6/93/419].

¹² Commemoration hearing 29 May 2018 [CH6/91/8-13].

¹³ Commemoration hearing 30 May 2018 [CH7/68/24-69/5].

¹⁴ Commemoration hearing 30 May 2018 [CH7/69/23-70/2].

¹⁵ Commemoration hearing 30 May 2018 [CH7/70/16-19].

¹⁶ Commemoration hearing 30 May 2018 [CH7/70/3-6]; [CH7/70/20-23].

¹⁷ Commemoration hearing 21 May 2018 [CH1/43/1-12].

¹⁸ Commemoration hearing 21 May 2018 [CH1/44/1-2].

- 32.26 Saber immediately threw himself into life in this country. He attended English and computer classes in a desire to better himself and to provide a good quality of life for his family. In 1999 the family moved into Flat 205, which was to be their home for 18 years.¹⁹
- 32.27 Saber was very hardworking and in those early years in the United Kingdom would take whatever work he could find to support his family. He spent time cleaning, delivering pizzas and working for a minicab firm as a driver. His experience as a driver led Saber to establish his own chauffeur business where he continued to work hard for his last 10 years. Saber was always impeccably turned out, wearing a smart suit and a range of colourful ties even when not at work. He developed a loyal group of customers drawn to his warm personality and professionalism.²⁰
- 32.28 Saber's hard work underpinned his dedication to his family. Many of his siblings settled in the United Kingdom, Netherlands and Germany and the extended family often took holidays together. Saber was most proud of the achievements of his son Farhad. He encouraged Farhad with his studies and interests. He would take him to Taekwondo competitions throughout the United Kingdom and Europe, always finding time for his son amid a busy working life. Farhad worked alongside his father while studying at university and Saber was there to see his son graduate. He was also extremely proud to throw his son an engagement party and the family explained that their successes were a product of Saber's hard work and positive attitude to life.²¹

Hesham Rahman (Flat 204)

- 32.29 Hesham Rahman lived in Flat 204. He was born on 30 January 1960 in Egypt.²² He was 57 years old at the time of the fire.
- 32.30 A video tribute to Hesham, prepared by his cousin Noha el Baghdady and her young son, was played at the hearing on 22 May 2018.²³ A moving and powerful tribute was delivered by Hesham's nephew, Karim Mussily.²⁴
- 32.31 Hesham always considered himself to be Noha's big brother and he loved and cared for her very deeply. He would do anything for his family, especially for Noha's mother, who was also a mother-figure for Hesham. Hesham's own mother had died in childbirth when he was three years old and he was primarily raised by his maternal grandmother and aunt.²⁵ He joined the family in the United Kingdom in the mid-1980s and set out to make a life for himself in his new country.
- 32.32 A talented hairdresser, Hesham had a kind and generous approach to life. He had a love of music and wrote poetry. Noha recalled that Hesham used to sing to her until she fell asleep. They would go on long walks together during which she would share her troubles and hopes.
- 32.33 Noha's young son described his uncle Hesham as the kindest man he had ever met. He remembered the fun they used to have together and how Hesham's personality made him stronger whenever he was with him.

¹⁹ Commemoration hearing 21 May 2018 [CH1/46/9-13]; Flora (Shakila) Neda first witness statement [IWS00000887] p. 3.

²⁰ Commemoration hearing 21 May 2018 [CH1/45/10-13]; [CH1/36/8-17].

²¹ Commemoration hearing 21 May 2018 [CH1/39/9-11]; [CH1/46/20-47/9].

²² Ragab witness statement [IWS00000475] p. 1.

²³ Commemoration hearing 22 May 2018 [CH2/90/16].

²⁴ Commemoration hearing 22 May 2018 [CH2/89/22-90/16].

²⁵ Ragab witness statement [IWS00000475] p. 1.

Rania Ibrahim, Fethia Hassan and Hania Hassan (Flat 203)

- 32.34 Rania Ibrahim lived in Flat 203 with her husband Hassan Awadh Hassan and their two daughters, Fethia, and Hania. Hassan was not in Grenfell Tower on the night of 13-14 June 2017.
- 32.35 Rania Ibrahim was born on 3 March 1986 in the city of Aswan in Egypt. She was 31 years old. Her eldest daughter, Fethia, was born on 5 October 2012. She was four years old. Her younger daughter, Hania, was born on 4 June 2014. She was three years old.
- 32.36 The commemorations for Rania, Fethia and Hania were given over three days. First, on 22 May 2018, from Rania's sister, Rasha Ahmed Adly Ibrahim.²⁶ Then on 23 May 2018 there was a video tribute prepared on behalf of Rania's sister, Sayeda Ibrahim.²⁷ Finally, on 29 May 2018, Hassan, Rania's husband and father to Fethia and Hania,²⁸ and Rania's good friend and neighbour, Munira Mahmud, shared their commemorations.²⁹
- 32.37 Rania grew up in a large family. She was an active and adventurous child who enjoyed swimming and riding her bicycle in the mountains and was a keen member of the Egyptian Scouts. As a child she enjoyed school and was a supportive student who would stand up for those in need. Her love of learning persisted throughout her life.³⁰
- 32.38 This quality led Rania to choose to study law and she successfully gained admission to university in Cairo to do so. Rania was a hard worker and while studying she also worked part-time in a pharmacy with her sister, Rasha.³¹
- 32.39 In 2009, Rania came to the United Kingdom to help care for her eldest sister Sayeda's four children, while Sayeda recovered from a serious illness. Sayeda recalled how Rania's caring and optimistic nature helped her to focus on her recovery.³²
- 32.40 Rania met Hassan in 2010 and they married the following year in the Al Manaar Mosque.³³ Hassan recalled that on the first day they met he knew from Rania's smile that she had a big heart. Their first daughter, Fethia, was born in 2012.³⁴
- 32.41 Fethia was an active and outgoing child who reminded her family of Rania. Known as "Fou-Fou" by Rania's family, she inherited her mother's playful personality. Rania's sister, Rasha, remembered a time when they had been visiting their family in Egypt. Rania, Fethia, Rasha and her son had had a food fight throwing eggs at each other. They still have video footage of the aftermath showing them covered in broken eggs.³⁵
- 32.42 Fethia was a confident child and Hassan told us about her first trial day at nursery, which was a week or so before she was due to start attending regularly. Fethia had a wonderful time and could not understand why she could not return the following day.³⁶ Hassan also remembered one morning when they had been rushing to their destination. They reached a quiet road with a pedestrian crossing indicating not to cross. When Hassan went to cross he was reprimanded by Fethia, who said: "Daddy, the man is red."³⁷

²⁶ Commemoration hearing 22 May 2018 [CH2/33/16-20].

²⁷ Commemoration hearing 23 May 2018 [CH3/6/11-22].

²⁸ Commemoration hearing 29 May 2018 [CH6/21/3-4].

²⁹ Commemoration hearing 29 May 2018 [CH6/27/16-20].

³⁰ Commemoration hearing 23 May 2018 [CH3/6/22].

³¹ Commemoration hearing 23 May 2018 [CH3/6/22].

³² Commemoration hearing 23 May 2018 [CH3/6/22].

³³ Commemoration hearing 22 May 2018 [CH2/34/3].

³⁴ Commemoration hearing 29 May 2018 [CH6/26/6].

³⁵ Commemoration hearing 22 May 2018 [CH2/35/17].

³⁶ Commemoration hearing 29 May 2018 [CH6/24/9-20].

³⁷ Commemoration hearing 29 May 2018 [CH6/24/21-25/5].

- 32.43 Rania and Hassan had their second daughter, Hania, in 2014. She idolised her elder sister and would copy everything Fethia did. Even at her young age Hania had a very grown-up attitude and would roll her eyes to show her disapproval. Hania was very happy when she could join her sister at nursery, where they were able to play together. The children had good manners, were respectful and were extremely happy in each other's company.³⁸
- 32.44 The family moved into Flat 203 in 2015.³⁹ Rania quickly established herself with new friends gained through her open and inquisitive nature together with her love of food and cooking for others. Her friend, Munira, said that even though Rania had a busy life, she would always find time for others. She would help Munira by looking after her father-in-law while she was away, cooking for him, making sure he had his medication and taking the time to talk to him, all while raising a family.⁴⁰ Above all, she spoke of Rania's kindness; her sister, Rasha, said that no one would sit with Rania and not smile.⁴¹

Gloria Trevisan and Marco Gottardi (Flat 202)

- 32.45 Gloria Trevisan and Marco Gottardi lived together in Flat 202. Gloria was born on 2 December 1990 in Camposampiero, in the province of Padua, Italy.⁴² She was 26 years old. Marco Gottardi was born on 26 June 1989. He was 27 years old.
- 32.46 On 29 May 2018, Gloria's mother and father, Emanuela Disaró and Loris Trevisan, gave a video tribute to their daughter followed by a short statement. Emanuela Disaró also spoke about Gloria and Marco in the witness statement she gave to the Inquiry.
- 32.47 Gloria's parents remembered how from a young age she had shown an interest in and exceptional talent for art. Gloria could produce incredibly accurate pencil drawings that looked like photographs. Upon leaving school she studied at art school and then decided to pursue architecture. Gloria studied at the University Institute of Architecture of Venice.⁴³
- 32.48 At university Gloria met Marco, a fellow architecture student, and they became a couple. After much hard work and sacrifice they both graduated in 2016 with degrees in architecture.⁴⁴
- 32.49 Gloria's main professional interest was in the restoration of old buildings rich in history and art. She had a very happy life in Italy. She had wonderful friends who cherished her advice. She was extremely close to her family and enjoyed the sunshine, food and lifestyle that Italy had to offer.⁴⁵
- 32.50 Marco and Gloria were very happy together and planned their lives as a couple.⁴⁶ In December 2016 they decided to move to the United Kingdom to learn English and to develop their professional skills; they felt the opportunities for work here would be better than in Italy. They eventually moved to London on 4 March 2017. They stayed with one of Marco's cousins for their first few weeks before moving into Grenfell Tower.⁴⁷

³⁸ Commemoration hearing 29 May 2018 [CH6/26/6].

³⁹ Commemoration hearing 29 May 2018 [CH6/21/22].

⁴⁰ Commemoration hearing 29 May 2018 [CH6/32/22-33/4].

⁴¹ Commemoration hearing 22 May 2018 [CH2/35/17].

⁴² Disaró first witness statement [IWS00000543] pp. 1-2.

⁴³ Disaró first witness statement [IWS00000543] p. 2.

⁴⁴ Disaró first witness statement [IWS00000543] p. 2.

⁴⁵ Commemoration hearing 29 May 2018 [CH6/36/12].

⁴⁶ Disaró first witness statement [IWS00000543] p. 2.

⁴⁷ Disaró first witness statement [IWS00000543] p. 3.

- 32.51 Gloria obtained a position at Peregrine Bryant Architects, a firm specialising in the conservation and restoration of historic buildings. For Gloria this was her dream job and the reason she had left her happy life in Italy. Peregrine Bryant spoke of Gloria's exceptional talent and how in the short time she had worked at the firm she had made a significant contribution to the development of the Royal Hospital, Chelsea.⁴⁸
- 32.52 Marco also found work in London, securing a position as an architect at Creative Ideas and Architecture Office.⁴⁹
- 32.53 Marco was a sound, grounded person. Gloria's mother referred to him as very rational; someone who never exaggerated and who used reason rather than instinct. He was very calm and sensible.⁵⁰
- 32.54 In their video presentation, Gloria's family described her as a simple girl who loved laughing and joking. She loved and was thoroughly loved in return by her friends and family.⁵¹

Raymond Herbert (Moses) Bernard (Flat 201)

- 32.55 Raymond (Moses) Bernard lived in Flat 201 with his dog Marley.⁵² He was born on 22 May 1954 in a small village in Penal on the island of Trinidad in the West Indies.⁵³ He was 63 years old.
- 32.56 The commemorations for Moses were heard on 30 May 2018. The address given by his sister, Sheramin Bernadette Bernard,⁵⁴ included a video of the remembrance service held for Moses and messages from his mother, Rose Bernard, and another sister, Marva Bernard, both of whom now live in Trinidad.⁵⁵ We also heard from Moses' son, Julian Bertin,⁵⁶ and his daughter, Marlene Bernard Anderson, who attended with Ashley Anderson.⁵⁷
- 32.57 Moses was the third of the seven children of Rose and Ben Bernard.⁵⁸ He spent his early life in Trinidad, where he attended the Penal Roman Catholic School,⁵⁹ leaving at the age of 14 to become an apprentice car mechanic.⁶⁰ In 1969 he joined his parents in London, where they were working. Raymond then attended Isaac Newton Boys' School in Ladbroke Grove.⁶¹
- 32.58 At the age of 16 Moses began an electrical engineering apprenticeship at the House of Lords. He qualified as an electrician and worked at the Houses of Parliament and Buckingham Palace.⁶² He met Sonia, whom he went on to marry, in 1973 and they had two daughters, Marlene and Selina. He had two other children including his son, Julian, born in 1978.⁶³

⁴⁸ Commemoration hearing 29 May 2018 [CH6/36/12].

⁴⁹ Disaró first witness statement [IWS00000543] p. 3.

⁵⁰ Disaró first witness statement [IWS00000543] p. 6.

⁵¹ Commemoration hearing 29 May 2018 [CH6/36/12].

⁵² Commemoration hearing 30 May 2018 [CH7/15/3].

⁵³ Commemoration hearing 30 May 2018 [CH7/7/11-12].

⁵⁴ Commemoration hearing 30 May 2018 [CH7/6/3].

⁵⁵ Commemoration hearing 30 May 2018 [CH7/20/13].

⁵⁶ Commemoration hearing 30 May 2018 [CH7/21/10-12].

⁵⁷ Commemoration hearing 30 May 2018 [CH7/23/2-4].

⁵⁸ Commemoration hearing 30 May 2018 [CH7/23/14-15].

⁵⁹ Commemoration hearing 30 May 2018 [CH7/7/24].

⁶⁰ Commemoration hearing 30 May 2018 [CH7/8/10-12].

⁶¹ Commemoration hearing 30 May 2018 [CH7/9/18-19].

⁶² Commemoration hearing 30 May 2018 [CH7/9/20-21]; [CH7/23/20-21].

⁶³ Commemoration hearing 30 May 2018 [CH7/23/22-24]; [CH7/10/3-7].

- 32.59 Moses had a deep love of music. He had been a sound man for the Gemini Sound System and his sister remembered him in his early twenties having long flowing locks resembling a free-spirited lion.⁶⁴ With his close friends, he also ran a nightclub called “The Embassy” in Shepherd’s Bush, playing reggae and soul music. Moses was an intrinsically happy person, his happiness stemming from being with those he loved and being surrounded by music.⁶⁵
- 32.60 Moses had lived on the top floor of Grenfell Tower for more than 30 years.⁶⁶ It was while living there that he met Karen, his partner for over 20 years.⁶⁷ Moses’ personality was warm and affectionate, like the Caribbean island where he had been born.⁶⁸ He never lost his love for Trinidad or the West Indian cricket team, which he supported with passion.⁶⁹ Moses was a charismatic, kind-hearted and warm person. He was a peaceful protector of his friends and family who would help anyone in need.⁷⁰

3 Floor 22

Eslah Elgwahry and Mariem Elgwahry (Flat 196)

- 32.61 Eslah Elgwahry and her daughter Mariem Elgwahry lived in Flat 196. Eslah, born on 1 December 1952, was 64 years old. Mariem was born on 11 April 1990 in London. She was 27 years old.
- 32.62 On 29 May 2018, Ahmed Elgwahry, the son of Eslah and brother of Mariem, spoke of his mother and sister but explained that he did not feel ready to speak in too much detail about his mother.⁷¹
- 32.63 Eslah had lived in Grenfell Tower for 34 years; Mariem had lived there for all her life.⁷² When Mariem was eight years old her father died and Eslah raised her two children alone. She instilled in them a strong family bond, so that they would support each other, come what may.⁷³
- 32.64 Mariem was a single-minded and ambitious young woman.⁷⁴ A graduate of Roehampton University, she went on to establish a successful career as a marketing manager.⁷⁵ She was a positive force with a mischievous sense of humour, who would not hesitate to play the fool if it made her friends and family smile.⁷⁶
- 32.65 Ahmed described his sister as a brave and adventurous woman who loved to travel the world. While on her travels, she climbed an active volcano, abseiled, paraglided, jet-skied and cycled around Mexico. Mariem loved adventures and lived for the moment.⁷⁷ She loved sport, particularly tennis.⁷⁸ Her drive and determination were shown by her efforts in raising money

⁶⁴ Commemoration hearing 30 May 2018 [CH7/24/1-2].

⁶⁵ Commemoration hearing 30 May 2018 [CH7/11/12-22]; [CH7/22/17-19].

⁶⁶ Commemoration hearing 30 May 2018 [CH7/16/8-10].

⁶⁷ Commemoration hearing 30 May 2018 [CH7/14/22-24].

⁶⁸ Commemoration hearing 30 May 2018 [CH7/22/9-16].

⁶⁹ Commemoration hearing 30 May 2018 [CH7/24/6-8].

⁷⁰ Commemoration hearing 30 May 2018 [CH7/20/13].

⁷¹ Commemoration hearing 29 May 2018 [CH6/17/8-17].

⁷² Commemoration hearing 29 May 2018 [CH6/18/15-16]; [CH6/2/11-12].

⁷³ Commemoration hearing 29 May 2018 [CH6/1/20-2/6].

⁷⁴ Commemoration hearing 29 May 2018 [CH6/4/12-14].

⁷⁵ Commemoration hearing 29 May 2018 [CH6/19/22-20/1].

⁷⁶ Commemoration hearing 29 May 2018 [CH6/3/9-16].

⁷⁷ Commemoration hearing 29 May 2018 [CH6/4/19-5/2].

⁷⁸ Commemoration hearing 29 May 2018 [CH6/2/17]; [CH6/10/17-21].

for those charitable causes close to her heart – even running the final four and a half miles of an obstacle course after receiving treatment for an asthma attack.⁷⁹

- 32.66 Mariem and Eslah had an extremely close relationship. Even in adulthood, Mariem continued to live with her mother in order to care for her.⁸⁰ Eslah was a strong woman and though she had raised two children on her own she remained young at heart. She was known for her authentic Egyptian cuisine. She wanted to maintain and share her Egyptian culture and tradition and was always cooking for neighbours, friends and family.⁸¹
- 32.67 Mariem’s caring nature was most strongly focused on her family. In the midst of a busy life she would always drop whatever she was doing to put her family first.⁸² She was an ambitious, talented and confident woman who was a credit to the mother who had raised her.

Anthony Disson (Flat 194)

- 32.68 Anthony Disson lived in Flat 194. He was born on 27 November 1951 in North Kensington. Known to everyone as Tony, he was 65 years old.
- 32.69 On 23 May 2018, Tony’s eldest son, Lee Disson, gave a commemoration for his father.⁸³ A video commemoration from his wife Cordelia and their three sons, Harriboy, Alfie and Charlie was also shown.⁸⁴
- 32.70 Tony was the youngest of seven children.⁸⁵ As a young man he met his first wife in 1967 and they had a son, Lee, who was born in February 1970.⁸⁶ They lived together in Shepherd’s Bush and then in 1974 moved to Fulham.⁸⁷
- 32.71 Tony’s love of sport endured throughout his life. He coached various sports at the Brunswick Boys’ Club in Fulham.⁸⁸ A loyal supporter of Fulham Football Club, he would attend their matches and lend his vocal support whenever he could.⁸⁹ Lee Disson recalled happy weekends and summer holidays spent at a chalet in Leysdown on the Isle of Sheppey and further afield in Gran Canaria.⁹⁰
- 32.72 Tony and his first wife divorced amicably and on New Year’s Eve 1987 he married Cordelia. The couple had a beautiful wedding with well-wishers celebrating their union into the new year, although Cordelia did say that not many people remembered the clock striking 12.⁹¹
- 32.73 Tony and Cordelia had three sons together: Harriboy, born in 1993, Alfie, born in 1994 and Charlie born in 1998.⁹² Tony was a good dad who loved his children and would do anything for them. He encouraged his sons’ love of boxing, taking them to the Dale Youth boxing club

⁷⁹ Commemoration hearing 29 May 2018 [CH6/6/22-7/11].

⁸⁰ Commemoration hearing 29 May 2018 [CH6/5/14-15]; [CH6/17/18-18/2].

⁸¹ Commemoration hearing 29 May 2018 [CH6/18/8-19].

⁸² Commemoration hearing 29 May 2018 [CH6/18/4-7].

⁸³ Commemoration hearing 23 May 2018 [CH3/8/4-7].

⁸⁴ Commemoration hearing 23 May 2018 [CH3/16/20].

⁸⁵ Commemoration hearing 23 May 2018 [CH3/8/14-15].

⁸⁶ Commemoration hearing 23 May 2018 [CH3/8/22-24].

⁸⁷ Commemoration hearing 23 May 2018 [CH3/9/4-5].

⁸⁸ Commemoration hearing 23 May 2018 [CH3/9/11-14].

⁸⁹ Commemoration hearing 23 May 2018 [CH3/9/18-22].

⁹⁰ Commemoration hearing 23 May 2018 [CH3/10/19-11/6].

⁹¹ Commemoration hearing 23 May 2018 [CH3/16/20].

⁹² Commemoration hearing 23 May 2018 [CH3/16/20].

at the bottom of Grenfell Tower. His sons excelled in the world of amateur boxing and Tony would drive them all over the country to take part in competitions. He always made his voice heard in support of his sons, even in the face of a partisan local crowd.⁹³

- 32.74 Tony had an excellent sense of humour which he passed on to his sons. Cordelia remembered her sons laughing while watching Tony trying to turn on a computer by talking to it; they had tricked him into thinking that that was the way to do it. They enjoyed teasing Tony, but he was a patient father, ready to watch their choice of television programmes so that he could spend time in their company. Tony became a proud grandfather and great-grandfather and idolised the younger members of his family.⁹⁴
- 32.75 Those closest to him described Tony as a generous man with a good heart. He would never see anyone go without, because he knew what it was like to be without. He was a good dad, a brilliant husband and a wonderful grandfather. He was not the richest man in the world, but he was rich with love for those he held closest.⁹⁵

The Choucair/Choukair Family (Flat 193 and Flat 191)

- 32.76 Nadia Choucair, Bassem Choukair and their daughters Mierna, Fatima and Zainab lived in Flat 193. Nadia's mother Sirria Choucair lived in Flat 191 on the same floor.
- 32.77 Sirria Choucair was born on 25 October 1956 in Lebanon. She was 60 years old. Her daughter Nadia was born on 14 January 1984 in London.⁹⁶ She was 33 years old. Bassem Choukair was born on 1 December 1976 in Lebanon and was 40 years old. Their three daughters were born in London; Mierna Choucair, born on 22 November 2003, was 13, Fatima Choucair, born on 1 March 2006, was 11 and Zainab Choucair, born on 17 May 2014, was three.
- 32.78 As well as Nadia, Sirria had three other children: her sons, Nabil and Hisam, and her daughter, Sawsan. Hisam and Sawsan Choucair presented their commemoration on 22 May 2018.⁹⁷ Nabil Choucair gave a separate commemoration on 30 May 2018.⁹⁸ A letter written by Bassem's parents was also read out by Mr Aboudihaj on 30 May 2018.⁹⁹
- 32.79 The second eldest child in her family, Sirria took responsibility for her younger siblings from an early age. She would cook, clean and get them ready for school and because of these responsibilities was not able to attend school herself.¹⁰⁰ Sirria moved to the United Kingdom at the age of 17 and married her husband. They set up home in Redcliffe Gardens, Earl's Court, where they brought up their four children.¹⁰¹ As soon as Sirria arrived in the country she enrolled herself on an English course.¹⁰² Education was something that she held in very high regard throughout her life.
- 32.80 Sirria very soon realised that to give her children a good life, she would need to find paid work alongside raising her family. She followed her husband into the food industry. Sirria spent all of her working life in the catering department at the Royal Marsden Hospital and loved her job very much.¹⁰³

⁹³ Commemoration hearing 23 May 2018 [CH3/16/20].

⁹⁴ Commemoration hearing 23 May 2018 [CH3/16/20]; [CH3/13/14].

⁹⁵ Commemoration hearing 23 May 2018 [CH3/16/20].

⁹⁶ Commemoration hearing 30 May 2018 [CH7/74/5].

⁹⁷ Commemoration hearing 22 May 2018 [CH2/62/4-18].

⁹⁸ Commemoration hearing 30 May 2018 [CH7/72/16-21].

⁹⁹ Commemoration hearing 30 May 2018 [CH7/82/4-7].

¹⁰⁰ Commemoration hearing 30 May 2018 [CH7/74/5].

¹⁰¹ Commemoration hearing 22 May 2018 [CH2/63/7-14].

¹⁰² Commemoration hearing 22 May 2018 [CH2/63/14-17].

¹⁰³ Commemoration hearing 22 May 2018 [CH2/63/18-64/2].

- 32.81 Sirria's life was characterised by hard work. She was the first to wake up in the morning and would cook delicious meals for the family, filling their home with appetising smells. She would then go to work and complete a full shift at the hospital before returning home to complete the housework.¹⁰⁴ Sirria wanted her children to have the opportunities that she had not enjoyed. Together with her husband she worked hard to put all four children through private schools.¹⁰⁵
- 32.82 Bassem lived in Lebanon where he worked as a welder. He also spent time in the military and was very well known in his town.¹⁰⁶ While Nadia was visiting her family in Lebanon she met Bassem and they agreed to marry.¹⁰⁷ Bassem came to live with Nadia in the United Kingdom where they had their three daughters. Bassem was an extremely hard worker and his priority was to make a good life for his family.¹⁰⁸ Waking early every morning, he would cycle to his job at Marks & Spencer. There he was quickly promoted to the position of Section Co-ordinator, where his strict approach, respected by those he managed, could not have been more different from the caring and affectionate man he was at home with his family.¹⁰⁹
- 32.83 Nadia and Bassem moved to Grenfell Tower in around 2006.¹¹⁰ When Mierna was old enough, she attended nursery at Avondale Park Primary School. Nadia had always wanted to work with children and she started working at Avondale as a nursery officer.¹¹¹ She was a valued member of staff, loved by parents, colleagues and children for her keen, positive approach and her desire to develop in her career.¹¹²
- 32.84 Mierna was a student at Kensington Aldridge Academy.¹¹³ She was a clever and fun-loving young woman who was a caring and compassionate friend.¹¹⁴ Mierna worked hard at school and excelled academically. Ambitious for her future, she was in the process of deciding whether to pursue a career in law or medicine.¹¹⁵ It is clear from a video she made about her morning routine that Mierna had a witty and keen eye for the details of life.¹¹⁶ She was also very active; she loved to go swimming at the weekends and she was extremely protective of her younger sisters.¹¹⁷
- 32.85 Fatima was a student in Year 6 at Avondale Park Primary School where her mother worked.¹¹⁸ She was much quieter than her sisters and was extremely active. She loved to participate in sports and played in the school football team. Fatima was an excellent gymnast and wanted to pursue the sport professionally.¹¹⁹ She had lots of friends who would often visit her and she always worked very hard to do her best at school. It was said that if something did not come naturally to her, she would do everything in her power to master it.¹²⁰

¹⁰⁴ Commemoration hearing 22 May 2018 [CH2/64/22-23].

¹⁰⁵ Commemoration hearing 22 May 2018 [CH2/65/14-16].

¹⁰⁶ Commemoration hearing 30 May 2018 [CH7/74/5].

¹⁰⁷ Commemoration hearing 22 May 2018 [CH2//79/18-20].

¹⁰⁸ Commemoration hearing 22 May 2018 [CH2/79/20-23].

¹⁰⁹ Commemoration hearing 22 May 2018 [CH2/80/1-6].

¹¹⁰ Commemoration hearing 22 May 2018 [CH2/74/13-14].

¹¹¹ Commemoration hearing 22 May 2018 [CH2/67/24-68/3].

¹¹² Commemoration hearing 22 May 2018 [CH2/83/21].

¹¹³ Commemoration hearing 22 May 2018 [CH2/70/24-71/1].

¹¹⁴ Commemoration hearing 22 May 2018 [CH2/83/21].

¹¹⁵ Commemoration hearing 22 May 2018 [CH2/71/6-7].

¹¹⁶ Commemoration hearing 30 May 2018 [CH7/74/5].

¹¹⁷ Commemoration hearing 22 May 2018 [CH2/83/21].

¹¹⁸ Commemoration hearing 22 May 2018 [CH2/83/21].

¹¹⁹ Commemoration hearing 22 May 2018 [CH2/78/12-14].

¹²⁰ Commemoration hearing 22 May 2018 [CH2/83/21].

- 32.86 Zainab was described as the spark of the family.¹²¹ She attended the nursery at Avondale. Zainab was a good actor who did not shy away from the limelight. She would delight in reciting her favourite nursery rhyme, “The Three Little Pigs”, to her family, who always enjoyed her performance.¹²² She would put olives on the ends of her fingers and eat them one by one. Zainab loved to make things; she also loved the company of her sisters, whom she would seek to imitate.¹²³ She had a very close relationship with her grandmother, Sirria, who would look after Zainab while Nadia and Bassem were at work. The two shared a very special bond.¹²⁴
- 32.87 Sirria’s husband died when he was 52 and that put considerable strain on her. She developed arthritis and was not able to continue working.¹²⁵ When Nadia and Bassem moved into Grenfell Tower, Sirria was able to move into Flat 191 on the same floor as her daughter.¹²⁶ It was here that she found a new role as a caring grandmother. She took great pleasure in being close to her daughter’s young family and helping to raise her grandchildren.¹²⁷ Sirria would travel every year to Lebanon to visit her own mother and the warmer climate helped to alleviate her arthritis.¹²⁸
- 32.88 The family was extremely close and would always be in and out of each other’s flats, cooking for one another, watching films and going to the park together.¹²⁹ They were a close knit, supportive family; a solid unit whose members adored each other.¹³⁰ Sirria instilled in her family a culture of respect for those around them and, in turn, they were respected by their community.¹³¹ The family spent their holidays in Lebanon and invested whatever money and time they could spare building a home for themselves by hand from the foundations up.¹³² It is clear that each member of the family lived their lives for others and that was the foundation upon which this strong and loving family was built.

The Jemal/Kedir Family (Flat 192)

- 32.89 Nura Jemal, Hashim Kedir and their children Yahya, Firdaws and Yaqub lived in Flat 192.
- 32.90 Nura Jemal was born on 1 August 1981 in Ethiopia. She was 35 years old. Hashim Kedir was born on 7 March 1973 in Addis Ababa, Ethiopia. He was 44 years old. Their children were all born in the United Kingdom; Yahya Hashim, born on 5 August 2003, was 13, Firdaws Hashim, born on 13 January 2005, was 12 and Yaqub Hashim, born on 18 May 2011, was 6.
- 32.91 On 25 May 2018 commemorations for the family were given on behalf of Hashim’s sister and brothers, Assema Habib, Shemsu Kedir Habib, and Redwan Kedir and on behalf of Nura’s sisters and brother, Bedriya Jemal Kelbeto, Nurya Jemal Kelbeto and Sadik Jemal Kelbeto. The commemorations included a video presentation.¹³³
- 32.92 Hashim was the eighth of nine children born to Aisha and Kedir Habib.¹³⁴ The family sadly lost Aisha when Hashim was very young and his father raised him with the help of his older

¹²¹ Commemoration hearing 22 May 2018 [CH2/83/21].

¹²² Commemoration hearing 30 May 2018 [CH7/74/5].

¹²³ Commemoration hearing 22 May 2018 [CH2/83/21].

¹²⁴ Commemoration hearing 22 May 2018 [CH2/76/22-77/4].

¹²⁵ Commemoration hearing 22 May 2018 [CH2/66/11-14].

¹²⁶ Commemoration hearing 22 May 2018 [CH2/66/14-18].

¹²⁷ Commemoration hearing 22 May 2018 [CH2/66/19-23].

¹²⁸ Commemoration hearing 22 May 2018 [CH2/67/8-9].

¹²⁹ Commemoration hearing 22 May 2018 [CH2/77/6-11].

¹³⁰ Commemoration hearing 22 May 2018 [CH2/83/21].

¹³¹ Commemoration hearing 30 May 2018 [CH7/74/5].

¹³² Commemoration hearing 22 May 2018 [CH2/81/4-10].

¹³³ Commemoration hearing 25 May 2018 [CH5/54/4-5].

¹³⁴ Commemoration hearing 25 May 2018 [CH5/72/25].

siblings.¹³⁵ Hashim's older siblings gave up the chance of an education to help raise the younger children. This had a lasting impact on Hashim, who was able to attend school, where he thrived.¹³⁶ Hashim was always top of the class and received high grades in his final exams. He went on to study electrical engineering.¹³⁷

- 32.93 Hashim came to the United Kingdom in 2000 and immediately threw himself into the world of work.¹³⁸ He was a construction worker, a parking attendant and an electrician. He then passed the Knowledge exam to become a black cab driver.¹³⁹ In 2002, Hashim met Nura in London through a mutual friend.¹⁴⁰
- 32.94 Nura was one of eight children born in a rural part of southern Ethiopia called Silte.¹⁴¹ The family shared a one-room house in a farming community.¹⁴² Nura did not attend school as a child but was very bright. At the age of 14 she moved to Addis Ababa to work as a housekeeper.¹⁴³ She then managed to open up a small shop where she sold tea and coffee.¹⁴⁴ Dedicated to her family, Nura sent the money she earned home to help support her entire family.¹⁴⁵ Nura then left Addis Ababa and went to work in Saudi Arabia before moving to the United Kingdom. She continued to support her family financially, morally and emotionally when living in London.¹⁴⁶
- 32.95 Nura and Hashim married and had three children. Yahya was described as kind, polite, loving, generous, thankful and pure-hearted.¹⁴⁷ He was a student in year nine at Kensington Aldridge Academy where his favourite subject was maths.¹⁴⁸ Yahya was a competitive boy who enjoyed playing basketball and football.¹⁴⁹ He was a unique character with a big heart who was always making people laugh.¹⁵⁰ A devout Muslim, he would lead the family in prayer.¹⁵¹ His wish when he grew up was to become an Ustadz, which is an Islamic scholar and teacher.¹⁵²
- 32.96 Firdaws' aunt Assema described her as intelligent, wise and eloquent with a wonderful singing voice.¹⁵³ She was a student in Year 7 at Kensington Aldridge Academy, where she excelled academically.¹⁵⁴ Firdaws was a voracious reader who would be perfectly happy concentrating on a book in the midst of a social gathering.¹⁵⁵ Even at her young age she was a gifted public speaker and was awarded a prize by Bill Gates for best floor speech when taking part for her school in Comic Relief's "The Big Debate". The journalist, Jon Snow, one of the judges, commented that Firdaws stood out above everybody else; she was spellbinding and confident and he felt she was going to go far.¹⁵⁶

¹³⁵ Commemoration hearing 25 May 2018 [CH5/73/2-8].

¹³⁶ Commemoration hearing 25 May 2018 [CH5/73/8-23].

¹³⁷ Commemoration hearing 25 May 2018 [CH5/73/21-23].

¹³⁸ Commemoration hearing 25 May 2018 [CH5/74/5-9].

¹³⁹ Commemoration hearing 25 May 2018 [CH5/74/9-12].

¹⁴⁰ Commemoration hearing 25 May 2018 [CH5/71/3-4].

¹⁴¹ Commemoration hearing 25 May 2018 [CH5/70/1-4].

¹⁴² Commemoration hearing 25 May 2018 [CH5/89/17-21].

¹⁴³ Commemoration hearing 25 May 2018 [CH5/89/24-90/9].

¹⁴⁴ Commemoration hearing 25 May 2018 [CH5/98/25-99/2].

¹⁴⁵ Commemoration hearing 25 May 2018 [CH5/90/5-9].

¹⁴⁶ Commemoration hearing 25 May 2018 [CH5/92/6-10].

¹⁴⁷ Commemoration hearing 25 May 2018 [CH5/65/21-22].

¹⁴⁸ Commemoration hearing 25 May 2018 [CH5/66/3-4].

¹⁴⁹ Commemoration hearing 25 May 2018 [CH5/103/17].

¹⁵⁰ Commemoration hearing 25 May 2018 [CH5/103/17].

¹⁵¹ Commemoration hearing 25 May 2018 [CH5/66/13-14].

¹⁵² Commemoration hearing 25 May 2018 [CH5/69/6-7].

¹⁵³ Commemoration hearing 25 May 2018 [CH5/61/7-8].

¹⁵⁴ Commemoration hearing 25 May 2018 [CH5/61/17-18].

¹⁵⁵ Commemoration hearing 25 May 2018 [CH5/62/9-13].

¹⁵⁶ Commemoration hearing 25 May 2018 [CH5/103/17].

- 32.97 Yaqub was a bundle of energy with a spirited, sharp mind; he was an inquisitive child able to make reasoned arguments even at his young age.¹⁵⁷ A student in Year 1 at Avondale Park Primary School, Yaqub was well liked by teachers and his classmates.¹⁵⁸ Yaqub was an extremely active child; he played football and loved to dance. His favourite song was “Watch Me” by Silentó – a song to which he knew all the choreography.¹⁵⁹ As the youngest child, he was determined to show that he could do whatever his elder siblings could do.¹⁶⁰ Yaqub was always laughing and brought a spark of happiness into the family.¹⁶¹
- 32.98 Nura was a positive-minded, devout and courageous mother and wife who loved her friends and appreciated the small things in life.¹⁶² Hashim was described as a smart, soft-hearted and generous man who loved football (he was a lifelong Arsenal supporter). He maintained a close relationship with his family in Ethiopia, whom he supported whenever he could.¹⁶³ Nura and Hashim encouraged all their children to learn Amharic so they could maintain a relationship with their extended family in Ethiopia.¹⁶⁴ The family would regularly return to Ethiopia to see friends and relations and make sure everyone was well cared for.¹⁶⁵
- 32.99 It is clear that the family were warm, close-knit and generous with both their time and their money. Firdaws is recorded at “The Big Debate” competition as saying:
- “We have so much and we’re so fortunate to have it, and we all have it, and we’re lucky to, so why shouldn’t others?”¹⁶⁶
- 32.100 These sentiments reflect the kindness, compassion and humanity of the family she grew up in.

4 Floor 21

Logan Gomes (Flat 183)

- 32.101 Logan was the son of Andreia Perestrelo and Marcio Gomes, who lived in Flat 183 with their two daughters. The family’s commemoration for Logan took place on 21 May 2018.¹⁶⁷
- 32.102 Logan was due to be born on 21 August 2017.¹⁶⁸ Marcio recalled how happy the family were about the prospect of their new arrival. He had cried when he found out he was going to have a son.¹⁶⁹ They held a baby shower for their friends and family and received lots of presents in anticipation of Logan’s birth.¹⁷⁰
- 32.103 The family had made detailed plans for Logan. Not only had they prepared the nursery, but they had decided that Logan would support Benfica and Liverpool.¹⁷¹ He would be Marcio’s

¹⁵⁷ Commemoration hearing 25 May 2018 [CH5/56/11-57/1].

¹⁵⁸ Commemoration hearing 25 May 2018 [CH5/58/21-25].

¹⁵⁹ Commemoration hearing 25 May 2018 [CH5/57/12-16].

¹⁶⁰ Commemoration hearing 25 May 2018 [CH5/57/19-21].

¹⁶¹ Commemoration hearing 25 May 2018 [CH5/58/19-20].

¹⁶² Commemoration hearing 25 May 2018 [CH5/69/23-24]; [CH5/70/17-18].

¹⁶³ Commemoration hearing 25 May 2018 [CH5/72/18-24].

¹⁶⁴ Commemoration hearing 25 May 2018 [CH5/101/9-11].

¹⁶⁵ Commemoration hearing 25 May 2018 [CH5/86/6-8].

¹⁶⁶ Commemoration hearing 25 May 2018 [CH5/103/17].

¹⁶⁷ Commemoration hearing 21 May 2018 [CH1/14/16].

¹⁶⁸ Commemoration hearing 21 May 2018 [CH1/17/7-9].

¹⁶⁹ Commemoration hearing 21 May 2018 [CH1/18/13-14].

¹⁷⁰ Commemoration hearing 21 May 2018 [CH1/18/17-19].

¹⁷¹ Commemoration hearing 21 May 2018 [CH1/18/1-2].

Xbox gaming buddy and his sisters wanted to help look after him.¹⁷² They were most excited about a planned trip to Disneyland the summer after Logan was due to arrive.¹⁷³

- 32.104 Logan was delivered stillborn on 14 June after his mother had escaped from the tower. Marcio described how he was able to hold his son. Logan was beautiful and restful; it was as if he was asleep.¹⁷⁴ Logan will always be with his family in their hearts. He was their little star.¹⁷⁵

The El Wahabi Family (Flat 182)

- 32.105 Abdulaziz and Faouzia El Wahabi lived in Flat 182 with their three children, Yasin, Nur Huda and Mehdi. As a family, the El Wahabis were a big, well-loved part of their community.
- 32.106 Abdulaziz El Wahabi was born on 1 December 1964 in Larache, in northern Morocco.¹⁷⁶ He was 52 years old. His wife Faouzia was born on 1 June 1975, also in Larache. She was 42 years old. Their son Yasin was born at St Mary's Hospital, Paddington, on 9 August 1996. He was 20 years old. Their daughter Nur Huda was born in St Mary's Hospital, Paddington¹⁷⁷ on 27 June 2001. She was 15 years old. Their youngest child Mehdi was born at Chelsea and Westminster Hospital on 22 February 2009. He was eight years old.
- 32.107 On 25 May 2018, several family members of the El Wahabis gave commemorations in person and by way of two video presentations.
- 32.108 Abdulaziz was described as a simple man who loved to travel. In 1976, when he was 11 years old, Abdulaziz and his family moved to the United Kingdom from Morocco.¹⁷⁸ Abdulaziz had a strong attachment to his British and Moroccan identity and filled his home in London with Moroccan décor.¹⁷⁹ He loved taking photographs at family gatherings and had many pictures, especially of his children, on his walls.¹⁸⁰ He was a kind, loyal family man, who was so proud when anyone in the family achieved anything in life.¹⁸¹ Abdulaziz was particularly close to his mother¹⁸² and was loving and supportive to his wife and children.¹⁸³
- 32.109 Abdulaziz worked in various trades throughout his life, including as a butcher, a mechanic, and a porter at University College Hospital London, where he remained for 22 years.¹⁸⁴ Marcel Levi, Chief Executive of UCLH Trust, described Abdulaziz as a popular colleague known for being kind to his patients.¹⁸⁵ Colleagues recalled that he brightened up the workplace with cheerful and cheeky banter, and was relaxed, chatty, and friendly to staff and patients alike. He went above and beyond what was required of him and his colleagues felt honoured to know and work with him.¹⁸⁶
- 32.110 Faouzia was the third of five children. She was artistic and creative. Her mother, Menana, recounted that by the age of seven Faouzia was already doing her own embroidery. She always wanted to stay indoors and help with adult tasks; she especially enjoyed helping out in

¹⁷² Commemoration hearing 21 May 2018 [CH1/18/20-22].

¹⁷³ Commemoration hearing 21 May 2018 [CH1/18/3-7].

¹⁷⁴ Commemoration hearing 21 May 2018 [CH1/17/13-16]; [CH1/19/25-20/1].

¹⁷⁵ Commemoration hearing 21 May 2018 [CH1/17/7].

¹⁷⁶ Commemoration hearing 25 May 2018 [CH5/15/12-16].

¹⁷⁷ Commemoration hearing 25 May 2018 [CH5/28/1-2].

¹⁷⁸ Commemoration hearing 25 May 2018 [CH5/39/17-18].

¹⁷⁹ Commemoration hearing 25 May 2018 [CH5/15/17-22].

¹⁸⁰ Commemoration hearing 25 May 2018 [CH5/15/21-24].

¹⁸¹ Commemoration hearing 25 May 2018 [CH5/18/5-6].

¹⁸² Commemoration hearing 25 May 2018 [CH5/43/1-7].

¹⁸³ Commemoration hearing 25 May 2018 [CH5/40/8-14].

¹⁸⁴ Commemoration hearing 25 May 2018 [CH5/16/14-20].

¹⁸⁵ Commemoration hearing 25 May 2018 [CH5/16/21-24].

¹⁸⁶ Commemoration hearing 25 May 2018 [CH5/17/4-18/1].

the kitchen.¹⁸⁷ Faouzia moved to London aged 20,¹⁸⁸ where she married Abdulaziz in 1994.¹⁸⁹ She was a lively, friendly woman who loved her role as a mother and wife. Described as the anchor of her family, she was always laughing and joking with her three children.¹⁹⁰

- 32.111 Faouzia continued to pursue her creative interests as an adult and was especially good at crochet and knitting, as well as having her own sewing machine. She was a natural teacher who was calm and patient when teaching her young niece how to knit.¹⁹¹ Faouzia used her skills to benefit others; she sold some of the items she made at Portobello Market, with the profits going back to her local community.¹⁹²
- 32.112 A famously good cook, Faouzia enjoyed making meals from different cuisines from all over the world. She was in demand as a baker and on 13 June 2017 had made cakes for a family friend's engagement party.¹⁹³ She used to cook every day for Abdulaziz's mother, to whom the whole family were very close.¹⁹⁴
- 32.113 Yasin was Abdulaziz and Faouzia's eldest child. He was studying accountancy part-time at Greenwich University. Alongside his studies, Yasin trained as a football referee and officiated at adult and children's games.¹⁹⁵ He was said to be just like his father in both looks and personality; both lit up the room when they walked in.¹⁹⁶
- 32.114 Joe Ward, a friend of Yasin, recalled how Yasin taught him to be confident at a time when he was struggling with anxiety due to the trauma of having lost his own father. Yasin and his family had treated him with great kindness and generosity. He remembered a particularly happy day which he and Yasin had spent riding around Yasin's estate on the back of a BMX, laughing, talking and getting chased by a group of girls. He described Yasin's strength of character and positive approach to life as an inspiration.¹⁹⁷ Another friend recalled how Yasin would lend a hand to anyone who needed it.¹⁹⁸
- 32.115 Nur Huda went to Thomas Jones Primary school and Holland Park Secondary School, where at the time of the fire she had been in the middle of taking her GCSEs.¹⁹⁹ She was remembered as a loyal and supportive friend.²⁰⁰ When her younger cousin had started at Holland Park, Nur Huda, like a big sister, had offered to take her to her classes, even though she knew it would make her late for her own.²⁰¹
- 32.116 Nur Huda's teacher, Ms Hirst, felt that Nur Huda had empathy well beyond her years, whilst her inherent sense of right, wrong and justice stood her in good stead. Nur Huda was industrious, ambitious and diligent at school; she wanted to earn her successes through her own hard work and hoped to become a PE teacher. Ms Hirst used to look forward to seeing the El Wahabis at parents' evenings, not least because the love between the whole family was palpable.²⁰²

¹⁸⁷ Commemoration hearing 25 May 2018 [CH5/46/22-24].

¹⁸⁸ Commemoration hearing 25 May 2018 [CH5/20/4].

¹⁸⁹ Commemoration hearing 25 May 2018 [CH5/47/14].

¹⁹⁰ Commemoration hearing 25 May 2018 [CH5/20/6-10]; [CH5/23/12-14].

¹⁹¹ Commemoration hearing 25 May 2018 [CH5/20/16-25].

¹⁹² Commemoration hearing 25 May 2018 [CH5/21/14-17].

¹⁹³ Commemoration hearing 25 May 2018 [CH5/22/4-21].

¹⁹⁴ Commemoration hearing 25 May 2018 [CH5/43/12-14].

¹⁹⁵ Commemoration hearing 25 May 2018 [CH5/24/4-9].

¹⁹⁶ Commemoration hearing 25 May 2018 [CH5/41/6-8].

¹⁹⁷ Commemoration hearing 25 May 2018 [CH5/25/2-22].

¹⁹⁸ Commemoration hearing 25 May 2018 [CH5/26/25-27/1].

¹⁹⁹ Commemoration hearing 25 May 2018 [CH5/28/2-4].

²⁰⁰ Commemoration hearing 25 May 2018 [CH5/32/5-6].

²⁰¹ Commemoration hearing 25 May 2018 [CH5/28/6-20].

²⁰² Commemoration hearing 25 May 2018 [CH5/30/5-31/17].

- 32.117 Mehdi was the baby of the family. He was mothered by both his parents and his siblings.²⁰³ He enjoyed playing Minecraft and Lego. Mehdi was like a collector, and had arranged his toys all over his desk – it was completely full.²⁰⁴ He enjoyed ice cream, curry and couscous. His young cousin thought that Mehdi would have become a comedian, though he would have needed to do some work on his jokes first.²⁰⁵
- 32.118 Mehdi's teacher from Oxford Gardens Primary School, Ms Trabelsi, thoroughly enjoyed teaching him. She felt that one of Mehdi's strongest qualities was his ability to make everyone laugh and smile; his smile lit up any room he entered and his kindness and generosity to others made him a very popular person.²⁰⁶ Oxford Gardens has dedicated a plaque to Mehdi and his family.²⁰⁷

Ligaya Moore (Flat 181)

- 32.119 Ligaya Moore lived alone in Flat 181. She was born on 28 October 1938 in the village of San Luis, Pampanga, in the Philippines.²⁰⁸ She was 78 years old.
- 32.120 On 25 May 2018, a commemoration for Ligaya was delivered by her friend Nenita Bungay on behalf of herself and Ligaya's niece, Caroline Custodio.²⁰⁹
- 32.121 Ligaya was the second of four children. As a young woman she had dreamt of travelling the world and exploring new places.²¹⁰ She left the Philippines in 1972 and travelled to London where she secured work as a nanny.²¹¹
- 32.122 Shortly after arriving in London she met her husband Jim. Having married, they spent many happy years together and explored the United Kingdom. They did not go further afield because Jim did not like to fly.²¹²
- 32.123 Ligaya was a stylish and sociable woman. She loved fashion and would always wear heels, claiming that she did not know how to walk in flat shoes.²¹³ She enjoyed shopping and would often visit the Westfield shopping centre with her friend Nenita.²¹⁴ Ligaya had a passion for ballroom dancing and others remarked that she was full of energy and enthusiasm. She would explore London on foot, often walking from Holland Park all the way to Trafalgar Square.²¹⁵
- 32.124 Ligaya loved living in Grenfell Tower. From her flat she enjoyed wonderful views across London and would often say to her friends that she felt on top of the world.²¹⁶ Ligaya was heavily involved in charity work and did a great deal to help those less fortunate than herself. She did not forget her early life in the Philippines and had set up a savings account to provide help to those in need in her country of origin.²¹⁷

²⁰³ Commemoration hearing 25 May 2018 [CH5/34/5-6].

²⁰⁴ Commemoration hearing 25 May 2018 [CH5/34/21-25].

²⁰⁵ Commemoration hearing 25 May 2018 [CH5/35/1-5].

²⁰⁶ Commemoration hearing 25 May 2018 [CH5/35/6-17].

²⁰⁷ Commemoration hearing 25 May 2018 [CH5/36/23-25].

²⁰⁸ Commemoration hearing 25 May 2018 [CH5/6/18].

²⁰⁹ Commemoration hearing 25 May 2018 [CH5/5/12-18].

²¹⁰ Commemoration hearing 25 May 2018 [CH5/6/19-20]; [CH5/7/3-5].

²¹¹ Commemoration hearing 25 May 2018 [CH5/7/9-10].

²¹² Commemoration hearing 25 May 2018 [CH5/7/10-14].

²¹³ Commemoration hearing 25 May 2018 [CH5/6/22-25].

²¹⁴ Commemoration hearing 25 May 2018 [CH5/8/1].

²¹⁵ Commemoration hearing 25 May 2018 [CH5/9/5]; [CH5/8/9-11].

²¹⁶ Commemoration hearing 25 May 2018 [CH5/8/16-9/1].

²¹⁷ Commemoration hearing 25 May 2018 [CH5/10/8-15].

- 32.125 Above all, she is remembered as a wonderful loving friend who was always generous with her time and affection.

5 Floor 20

Jessica Urbano Ramirez (Flat 176)

- 32.126 Jessica Urbano Ramirez lived in Flat 176 with her family.²¹⁸ Jessica was born on 4 July 2004 in London. She was 12 years old.
- 32.127 Jessica's sister, Melanie, her mother, Adriana Ramirez and her father, Ramiro Urbano, presented a commemoration for Jessica on 25 May 2018.
- 32.128 Adriana described how Jessica had brought joy to the family's lives from the day she was born. She was bubbly and cheeky and always willing to meet a challenge. Jessica loved to make her family happy and was a selfless and caring girl. She enjoyed cooking, especially baking cakes. She always offered her father the chance to try what she had made, and if he was cooking, she would always want to be involved.²¹⁹
- 32.129 Jessica also loved to go out, either with her family or her friends. She liked to try out different food at different restaurants, but also enjoyed shopping. Melanie remembered how her sister always managed to keep up with the latest trends and hairstyles.²²⁰
- 32.130 Adriana described how Jessica especially enjoyed lazy Sundays with her mum, watching movies under the duvet and eating popcorn. Despite this, she also found time to join in many after-school activities such as swimming. Her father described her as a "busy bee".²²¹
- 32.131 Melanie said that her sister was full of joy and laughter. She remembered listening to Jessica singing and called her a "real diva".²²²
- 32.132 Jessica was looking forward to turning 13 and having a party with her friends.²²³ She was already planning her Quinceañera, which is a traditional coming-of-age party held when a girl turns 15. Jessica said that she wanted to wear a beautiful yellow dress.²²⁴ Jessica had begun to make plans for her future. Her family miss her terribly.²²⁵

The Belkadi/Hamdan Family (Flat 175)

- 32.133 Omar Belkadi, Farah Hamdan and their daughters, Malak and Leena Belkadi, lived in Flat 175 with Omar and Farah's third daughter who survived the fire.
- 32.134 Omar was born on 1 August 1984 in Morocco. He was 32 years old. He worked at a pizza restaurant.²²⁶ Farah was born on 23 February 1986 in London. She was 31 years old. She was a teacher.²²⁷ Malak was born on 26 September 2008 at St Mary's Hospital, London. She was eight years old when she died. Leena was born on 14 December 2016 at St Mary's Hospital, London. She was six months old when she died.

²¹⁸ Adriana Ramirez witness statement [IWS00001116] p. 1.

²¹⁹ Commemoration hearing 25 May 2018 [CH5/53/18].

²²⁰ Commemoration hearing 25 May 2018 [CH5/53/18].

²²¹ Commemoration hearing 25 May 2018 [CH5/53/18].

²²² Commemoration hearing 25 May 2018 [CH5/53/18].

²²³ Commemoration hearing 25 May 2018 [CH5/53/18].

²²⁴ Commemoration hearing 25 May 2018 [CH5/53/6-10].

²²⁵ Commemoration hearing 25 May 2018 [CH5/53/18].

²²⁶ Commemoration hearing 30 May 2018 [CH7/31/2-3].

²²⁷ Commemoration hearing 30 May 2018 [CH7/27/19-20].

- 32.135 On 30 May 2018, Farah’s father, El Alami Hamdan, gave a commemoration for Omar, Farah, Malak and Leena.
- 32.136 El Alami Hamdan said that his daughter Farah had lived in West London all her life.²²⁸ A good student at school,²²⁹ she was a respectful person to whom family was very important.²³⁰ Farah went on to become a teacher.²³¹
- 32.137 Farah enjoyed holidays with her family, particularly to Morocco, where Omar’s family lived. She was pleased that as part of these trips her children would learn to speak Arabic.²³² Her father described Farah as the best mother to her girls;²³³ she was always fair with them.²³⁴
- 32.138 El Alami Hamdan spoke fondly of how much Farah and Omar loved each other,²³⁵ and reflected that Omar’s parents themselves were very good people.²³⁶ Farah and Omar had a “magic” wedding, and El Alami Hamdan was very proud of their union.²³⁷ He had a really good bond with his daughter. His bond with Omar was also strong. Omar called him “Uncle”²³⁸ and, in turn, El Alami Hamdan thought of Omar as his son. Omar would do anything for him.²³⁹
- 32.139 Omar was someone with a reputation for honesty and integrity within the community.²⁴⁰ He was popular at work, and when he used to deliver pizza, he always got a tip. El Alami Hamdan reflected that “everyone loved him”.²⁴¹
- 32.140 Malak, Leena and their sister knew El Alami Hamdan as “Jiddi”, meaning Grandpa.²⁴² He loved being a grandfather and thought of the girls as his children.²⁴³ He spoke of how Malak was always smiling.²⁴⁴ She used to go to karate lessons with her sister on Saturday mornings and on Sundays they would go to the mosque to study Arabic.²⁴⁵ The family would enjoy their main meal together in the evenings, after which the children were allowed to enjoy some sweets or crisps.²⁴⁶
- 32.141 El Alami Hamdan last saw his daughter on the afternoon of 13 June 2017 as he was on the way to the mosque. Leena was in a buggy and they were on the way to collect Malak and her sister from school. He had played peek-a-boo with Leena and hugged his daughter.²⁴⁷

Mary Mendy and Khadija Saye (Flat 173)

- 32.142 Mary Mendy and her daughter, Khadija Saye, lived in Flat 173. Mary was born on 11 June 1963 in Long Street, Gambia and was 54 years old. Khadija was born on 30 July 1992 in Hammersmith. She was 24 years old.

²²⁸ Commemoration hearing 30 May 2018 [CH7/27/4-6].

²²⁹ Commemoration hearing 30 May 2018 [CH7/27/19].

²³⁰ Commemoration hearing 30 May 2018 [CH7/28/6-12]; [CH5/28/15].

²³¹ Commemoration hearing 30 May 2018 [CH7/27/19-20].

²³² Commemoration hearing 30 May 2018 [CH7/27/25-28/5].

²³³ Commemoration hearing 30 May 2018 [CH7/28/10-12].

²³⁴ Commemoration hearing 30 May 2018 [CH7/31/23].

²³⁵ Commemoration hearing 30 May 2018 [CH7/29/16-19].

²³⁶ Commemoration hearing 30 May 2018 [CH7/29/21-22].

²³⁷ Commemoration hearing 30 May 2018 [CH7/30/4-8].

²³⁸ Commemoration hearing 30 May 2018 [CH7/30/15-20].

²³⁹ Commemoration hearing 30 May 2018 [CH7/31/15-19].

²⁴⁰ Commemoration hearing 30 May 2018 [CH7/32/8-13].

²⁴¹ Commemoration hearing 30 May 2018 [CH7/31/11-13].

²⁴² Commemoration hearing 30 May 2018 [CH7/33/23-24].

²⁴³ Commemoration hearing 30 May 2018 [CH7/33/25-34/1].

²⁴⁴ Commemoration hearing 30 May 2018 [CH7/32/21-24].

²⁴⁵ Commemoration hearing 30 May 2018 [CH7/33/1-4].

²⁴⁶ Commemoration hearing 30 May 2018 [CH7/33/15-18].

²⁴⁷ Commemoration hearing 30 May 2018 [CH7/34/2-13].

- 32.143 Mary and Khadija's friends and family gave commemorations for them on 21 and 22 May 2018.
- 32.144 Mary moved to the United Kingdom in the 1980s.²⁴⁸ Her cousin Ambrose recalled how the two of them worked together for around 18 months when Mary first arrived in the country.²⁴⁹ Mary was the first of six siblings to settle in the United Kingdom.²⁵⁰ In 1992, her daughter Khadija was born and her niece Marion Telfer moved to live with them. They moved into Grenfell Tower in about 1993.²⁵¹
- 32.145 Mary enjoyed sightseeing around London with her eldest brother, Pa Sarr, but liked reminders of her home country too. She was a very good cook and used to make Gambian food for her family members when they came to see or stay with her.²⁵²
- 32.146 Family members remembered Mary as the best aunt and sister they could have asked for; she was warm and kind, and was always there to provide support for them.²⁵³ Her cousin Clarrie Mendy described Mary's smile as "like sunshine"²⁵⁴ and Mary as well-loved within her community, in part due to her "Christian nature".²⁵⁵ As a carer, Mary worked to help those less fortunate than herself, and she frequently travelled to Gambia and offered donations to hospitals and other organisations.²⁵⁶
- 32.147 The day Khadija was born was the proudest day of Mary's life.²⁵⁷ At 14, Khadija won a scholarship to Rugby School and was recognised as an excellent student.²⁵⁸ Her father, Mohammadou Saye, recalled that growing up, Khadija's burning passion was for photography. It gave her great happiness and satisfaction. After school, Khadija went on to study the subject at the University for Creative Arts in Farnham.²⁵⁹
- 32.148 Khadija was developing an exciting career in photography and exhibited her work at the Venice Biennale in May 2017. In preparation for the festival, Khadija was interviewed and filmed by the BBC. We were shown part of the footage, in which she spoke of how her work had developed over the years. She explained that her photography explored her British-Gambian identity and the duality she felt from this and her family's different faiths (her mother was a Christian, and her father is a Muslim). The film revealed that several people had sought to purchase Khadija's work at the festival.²⁶⁰
- 32.149 At the commemoration, Damel Carayol, a relative of Mary and Khadija, presented the Inquiry with a painting of Grenfell Tower.²⁶¹ It was hung on the wall of the main hearing room at the start of the Phase 1 hearings, where it remains as a permanent reminder to all present of the horrors of the night and its aftermath.

Victoria King and Alexandra Atala (Flat 172)

- 32.150 Victoria (Vicky) King lived in Flat 172 with her daughter Alexandra Atala. Born on 12 June 1946, she was 71 years old. Alexandra Atala, born on 24 April 1977, was 40 years old.

²⁴⁸ Commemoration hearing 21 May 2018 [CH1/51/5-7].

²⁴⁹ Commemoration hearing 22 May 2018 [CH2/50/7-8].

²⁵⁰ Commemoration hearing 22 May 2018 [CH2/39/17-18].

²⁵¹ Commemoration hearing 21 May 2018 [CH1/51/18-20].

²⁵² Commemoration hearing 22 May 2018 [CH2/40/1-5].

²⁵³ Commemoration hearing 21 May 2018 [CH1/52/2-5].

²⁵⁴ Commemoration hearing 22 May 2018 [CH2/44/24].

²⁵⁵ Commemoration hearing 22 May 2018 [CH2/56/12-18].

²⁵⁶ Commemoration hearing 21 May 2018 [CH1/52/9-10].

²⁵⁷ Commemoration hearing 21 May 2018 [CH1/51/7-9].

²⁵⁸ Commemoration hearing 22 May 2018 [CH2/56/19-20].

²⁵⁹ Commemoration hearing 21 May 2018 [CH1/53/14-17].

²⁶⁰ Commemoration hearing 21 May 2018 [CH1/55/3].

²⁶¹ Commemoration hearing 22 May 2018 [CH2/59/11-12].

- 32.151 On 24 May 2018, Penny Pearce, Vicky's sister, gave a short commemoration for them.²⁶²
- 32.152 At one time Penny had lost touch with her sister Vicky and niece Alexandra, but was able to re-establish contact with the help of the Salvation Army.²⁶³ It meant a great deal to the family to be reunited.²⁶⁴
- 32.153 Vicky and Alexandra had a very close relationship and stayed together throughout their lives.²⁶⁵ The family shared pictures of Vicky and Alexandra at different stages in their lives when they looked very happy.²⁶⁶

6 Floor 19

Mohamednur Tuccu, Amal Ahmedin and Amaya Tuccu Ahmedin (Flat 166)

- 32.154 Amal Ahmedin and Amaya Tuccu Ahmedin lived in Flat 166. Amaya's father Mohamednur Tuccu was also at the flat on the night. Amal was born on 1 January 1982 in Sudan and was 35 years old. Mohamednur was born 24 May 1973 in London. He was 44 years old. Amaya was born on 25 February 2014 in London. She was 3 years old at the time of her death.
- 32.155 On 24 May 2018, Winta Afewerki,²⁶⁷ Feruza Afewerki, Amal's sisters,²⁶⁸ and Ibrahim Toukou, Mohamednur's brother²⁶⁹ presented their commemorations.
- 32.156 Feruza explained that Amal had four sisters: herself, Fatima Ahmedin, Winta Afewerki and Hawa Ahmedin.²⁷⁰ Winta praised her sister's capacity to love, which she described as "unmatchable".²⁷¹ She and Amal had shared a room growing up and she recalled that, if she had nightmares as a child, Amal would hold on to her and squeeze them out for her.²⁷²
- 32.157 Amal loved to have a good time and to surround herself with positive, amazing people.²⁷³ She lived each day as if it was her last, and was the life of the party.²⁷⁴ She did not judge others and she would help anyone regardless of their background.²⁷⁵ She learned five languages so that she would be able to communicate with as many people as possible, and because she loved making new friends.²⁷⁶
- 32.158 Mohamednur had eight siblings. They grew up in a small city in Eritrea. Mohamednur's brother described him as a very funny person; he loved to entertain others, and did whatever he thought might make them happy, including singing and making up jokes. As a child he used to perform for the local children, sometimes making a screen with curtains and a light.²⁷⁷

²⁶² Commemoration hearing 24 May 2018 [CH4/8/1-8].

²⁶³ Commemoration hearing 24 May 2018 [CH4/9/1-8].

²⁶⁴ Commemoration hearing 24 May 2018 [CH4/9/9-10].

²⁶⁵ Commemoration hearing 24 May 2018 [CH4/9/10-11].

²⁶⁶ Commemoration hearing 24 May 2018 [CH4/9/14-15].

²⁶⁷ Commemoration hearing 24 May 2018 [CH4/11/2-3].

²⁶⁸ Commemoration hearing 24 May 2018 [CH4/13/15-19].

²⁶⁹ Commemoration hearing 24 May 2018 [CH4/16/7].

²⁷⁰ Commemoration hearing 24 May 2018 [CH4/10/16-19].

²⁷¹ Commemoration hearing 24 May 2018 [CH4/11/7].

²⁷² Commemoration hearing 24 May 2018 [CH4/11/14-16].

²⁷³ Commemoration hearing 24 May 2018 [CH4/11/11-12].

²⁷⁴ Commemoration hearing 24 May 2018 [CH4/14/15-16].

²⁷⁵ Commemoration hearing 24 May 2018 [CH4/11/7-10].

²⁷⁶ Commemoration hearing 24 May 2018 [CH4/14/24-15/2].

²⁷⁷ Commemoration hearing 24 May 2018 [CH4/16/2].

- 32.159 Mohamednur moved to the United Kingdom in around 1991. He studied Genetics at Queen Mary University and Informatics at the University of Westminster. As well as his ability to entertain, Mohamednur was known for being well-mannered and kind.²⁷⁸
- 32.160 Despite living in different countries, Mohamednur remained close to his parents and family and spoke to them regularly. His mother was especially pleased when Mohamednur and Amal brought Amaya to Eritrea.²⁷⁹ Mohamednur was also close to Amal's family; Winta recalled how he would treat her like a little sister, buying Amal's sisters gifts when they came round, and talking to them as if they were his friends.²⁸⁰
- 32.161 Amal and Mohamednur adored their daughter, Amaya. She was the first baby in their respective families and was surrounded by love from all her relatives.²⁸¹ Winta remembered how Amaya's infectious laugh would make her whole body shake and she would jump up and down. Amaya loved to play with anyone, young or old, and had a cheeky side to her. She was an intelligent child, and the family were enjoying seeing her personality develop as she grew older; it was already very clear that she was her mother's daughter.²⁸²
- 32.162 Amaya loved music, singing and dancing. When she saw someone busking in the street she would often stop and break into dance. She especially loved to sing along to the "Frozen" soundtrack at the top of her lungs.²⁸³

Amna Mahmud Idris

- 32.163 Amna Idris did not live in Grenfell Tower. She was visiting her cousin Amal Ahmedin at the time of the fire. Amna was born on 1 January 1990 in Eritrea. She was 27 years old.
- 32.164 Her husband, Ibrahim Abdulkarim, spoke about Amna at the commemoration hearing on 24 May 2018.²⁸⁴ Amna had moved to Sudan from Eritrea in 2010. She met Ibrahim while in Sudan and they married there in January 2012.²⁸⁵ They lived together for some years before being separated when Ibrahim moved to London. In March 2016, Amna was able to join Ibrahim in the United Kingdom where they were very happy together.²⁸⁶
- 32.165 Amna especially loved the arts and her ambition was to become an art designer. Amna also enjoyed reading and walking and like her cousin, Amal, was always willing to help those around her.²⁸⁷

Maria del Pilar (Pily) Burton (Flat 165)

- 32.166 Maria del Pilar Burton was born in the town of Ferrol, Galicia, Spain.²⁸⁸ Known to all as Pily, she lived in Flat 165 with her husband Nicholas Burton. They both survived the fire on 14 June 2017. Pily died on 29 January 2018.²⁸⁹

²⁷⁸ Commemoration hearing 24 May 2018 [CH4/16/2].

²⁷⁹ Commemoration hearing 24 May 2018 [CH4/16/2].

²⁸⁰ Commemoration hearing 24 May 2018 [CH4/12/12-15].

²⁸¹ Commemoration hearing 24 May 2018 [CH4/12/5-11].

²⁸² Commemoration hearing 24 May 2018 [CH4/12/16-20].

²⁸³ Commemoration hearing 24 May 2018 [CH4/15/10-16].

²⁸⁴ Commemoration hearing 24 May 2018 [CH4/16/8-16].

²⁸⁵ Commemoration hearing 24 May 2018 [CH4/16/16-18].

²⁸⁶ Commemoration hearing 24 May 2018 [CH4/17/5-8].

²⁸⁷ Commemoration hearing 24 May 2018 [CH4/16/21-25].

²⁸⁸ Commemoration hearing 22 May 2018 [CH2/20/5-7].

²⁸⁹ Pily Burton is not counted among those who died as a direct result of the fire. Nonetheless, she is much missed and was commemorated as a member of the Grenfell Tower community by her husband Nicholas Burton.

- 32.167 On 22 May 2018, Nicholas Burton delivered his commemoration for Pily.²⁹⁰
- 32.168 Pily was an only child, but when she was growing up, her parents cared for two boys, Mani and Jose Maria, whom they brought up as her brothers.²⁹¹ When Pily was a teenager, she moved with her parents to London, settling into a large house in North Kensington.²⁹² Pily was a very outgoing young person, a trait that persisted throughout her life. She quickly learnt to speak English without a Spanish accent, in addition to being able to speak Portuguese, Italian and French.²⁹³
- 32.169 After leaving school, Pily entered the catering industry and at the age of 17 met her first husband. Soon after, she fell pregnant and gave birth to her son, Victor.²⁹⁴ Pily and her husband divorced and in the early 1970s, she moved into Grenfell Tower.²⁹⁵
- 32.170 Pily and Nicholas met in 1983 at a discotheque while he was studying in the sixth form.²⁹⁶ She was friendly and flamboyant, an excellent dancer with a magnetic personality.²⁹⁷ As he put it, Nicholas moved into Pily's flat in Grenfell Tower, "sock by sock". They were together for 16 years before marrying in 2000.²⁹⁸
- 32.171 Their home was a colourful place, full of music, food and friends.²⁹⁹ Pily and her family loved traditional Galician music but she especially loved reggae.³⁰⁰ Food was of paramount importance to Pily and she enjoyed cooking for friends and family; her paella was internationally known and sought-after.³⁰¹ Pily also had a passion for fashion and was a flamboyant and colourful dresser with a sense of style which others would often praise.³⁰²
- 32.172 Pily spent many years working as a contract manager in the NHS. In her final job she worked at St Charles Hospital with responsibility for the porters, domestic and catering staff. Pily was loved and respected by those she worked with because she looked after everyone.³⁰³
- 32.173 Family was extremely important to Pily and she was a proud mother, grandmother and great-grandmother. She cared for both of her parents before they died.³⁰⁴ The death of her brother, Jose Maria, in a road accident shortly after the loss of her parents affected her very deeply.³⁰⁵
- 32.174 After a wonderful trip round France, Switzerland and Italy, Pily was diagnosed with dementia and she had to leave work in 2015.³⁰⁶ After escaping the fire at Grenfell Tower, her condition deteriorated and she suffered a severe stroke in early January 2018. Having waited to see her son, Victor, she died on 29 January 2018 with Nicholas by her side.³⁰⁷

²⁹⁰ Commemoration hearing 22 May 2018 [CH2/17/15].

²⁹¹ Commemoration hearing 22 May 2018 [CH2/20/16-21].

²⁹² Commemoration hearing 22 May 2018 [CH2/20/22-24].

²⁹³ Commemoration hearing 22 May 2018 [CH2/21/1-4].

²⁹⁴ Commemoration hearing 22 May 2018 [CH2/21/8].

²⁹⁵ Commemoration hearing 22 May 2018 [CH2/19/24-20/1].

²⁹⁶ Commemoration hearing 22 May 2018 [CH2/19/13-16].

²⁹⁷ Commemoration hearing 22 May 2018 [CH2/19/17-22].

²⁹⁸ Commemoration hearing 22 May 2018 [CH2/21/13-18].

²⁹⁹ Commemoration hearing 22 May 2018 [CH2/21/19-23].

³⁰⁰ Commemoration hearing 22 May 2018 [CH2/22/11-15].

³⁰¹ Commemoration hearing 22 May 2018 [CH2/22/25-23/1].

³⁰² Commemoration hearing 22 May 2018 [CH2/23/23-24].

³⁰³ Commemoration hearing 22 May 2018 [CH2/24/16-24].

³⁰⁴ Commemoration hearing 22 May 2018 [CH2/25/1-11].

³⁰⁵ Commemoration hearing 22 May 2018 [CH2/25/14-16].

³⁰⁶ Commemoration hearing 22 May 2018 [CH2/25/23-26/15].

³⁰⁷ Commemoration hearing 22 May 2018 [CH2/29/16-19].

- 32.175 Pily was remembered as a magnetic,³⁰⁸ talkative and gregarious person with an enthusiasm for life. It was said that the song she sang most often, “Three Little Birds” by Bob Marley and the Wailers, encapsulated her approach to the world:

“Don’t worry about a thing, cause every little thing gonna be all right.”³⁰⁹

Majorie Vital and Ernie Vital (Flat 162)

- 32.176 Majorie Vital lived in Flat 162. Her son Ernie Vital was staying with her on 13 June 2017.
- 32.177 Majorie, born on 14 November 1948, was 68 years old. Ernie, born on 11 January 1967, was 50 years old.³¹⁰
- 32.178 On 23 May 2018, two commemorations were presented on behalf of the family of Majorie and Ernie Vital: first, a commemoration written by Paula Bellot, Majorie’s sister and Ernie’s aunt, and secondly, a video commemoration from Majorie’s other son, who did not wish to be named during the commemoration hearings.
- 32.179 Majorie was born the fourth of nine siblings in Soufrière, Dominica.³¹¹ Her parents moved to the United Kingdom when Majorie was seven,³¹² leaving the children with their grandparents, so Majorie took on a maternal role within the family caring for her younger siblings. Paula recalled how Majorie would comb and braid her hair for her and how she even sewed Paula’s school uniform.³¹³
- 32.180 Majorie was a quiet but strict person and a good cook. She took on the responsibility of cooking for her whole family when her grandmother was out at work.³¹⁴ She enjoyed Home Economics lessons at school and often cooked a meal to practise what she had learned that day.³¹⁵
- 32.181 Majorie had her first child aged 15 and left school at 16. She was pregnant with her second son when she travelled to London.³¹⁶ Initially she lived with her parents in North Kensington, before moving to her flat in Grenfell Tower where she lived for the rest of her life.³¹⁷ She was proud of her home and her family used to tease her about it, calling it “Majorie’s Tower”.³¹⁸ Majorie worked very hard on behalf of her family; she continued to make clothes throughout her life, using her early talents as a seamstress to her advantage.³¹⁹
- 32.182 Ernie lived for his mother, to whom he was very close; his brother said that “Ernie’s umbilical cord was never cut”. The family had many moments of happiness; Majorie’s son could remember walking towards Grenfell Tower at around Christmas one year and seeing the star on top of their Christmas tree through the window from the road.³²⁰

³⁰⁸ Commemoration hearing 22 May 2018 [CH2/19/21].

³⁰⁹ Commemoration hearing 22 May 2018 [CH2/30/6-9].

³¹⁰ Commemoration hearing 23 May 2018 [CH3/34/19].

³¹¹ Commemoration hearing 23 May 2018 [CH3/30/18-22].

³¹² Commemoration hearing 23 May 2018 [CH3/30/22-25].

³¹³ Commemoration hearing 23 May 2018 [CH3/30/25-31/1].

³¹⁴ Commemoration hearing 23 May 2018 [CH3/31/6-9].

³¹⁵ Commemoration hearing 23 May 2018 [CH3/31/9-10].

³¹⁶ Commemoration hearing 23 May 2018 [CH3/32/3-6].

³¹⁷ Commemoration hearing 23 May 2018 [CH3/32/7-10].

³¹⁸ Commemoration hearing 23 May 2018 [CH3/32/10-13].

³¹⁹ Commemoration hearing 23 May 2018 [CH3/34/19].

³²⁰ Commemoration hearing 23 May 2018 [CH3/34/19].

- 32.183 He remembered spending lots of time watching television with Ernie as children, and described how the band Earth, Wind and Fire reminded him of his brother. Ernie was a lively, engaging and expressive person who loved to dance. When he danced, his brother said, the universe flowed through him.³²¹

Debbie Lamprell (Flat 161)

- 32.184 Deborah (Debbie) Lamprell lived in Flat 161. She was born on 3 August 1971 in Walthamstow, London and was 45 years old.
- 32.185 On 22 May 2018, Michael Volpe, of Holland Park Opera, delivered a commemoration on behalf of Debbie's mother, Miriam Lamprell.³²² It included a video recording from a memorial service held at Holland Park Opera, where Debbie worked as a safety officer.³²³
- 32.186 Debbie was an only child and grew up in Highams Park.³²⁴ Her mother recalled that she was always extremely popular and loved other people's company.³²⁵ The large park opposite their home was the perfect place for Debbie and her friends to play and Debbie would grumble at having to be the first person to go home, just because she lived so close.³²⁶
- 32.187 Debbie's parents encouraged her to do a variety of things, such as Sunday school, ballet and tap lessons, learning the guitar and taking trips to the theatre.³²⁷ However, it was sport that Debbie adored: in particular, she played tennis and snooker and loved watching darts, snooker, drag racing and, as a Spurs fan, football.³²⁸
- 32.188 Debbie lived at home until she was 31.³²⁹ Her mother recalled how Debbie had "worshipped" her dad, and that she was his "treasure" in return.³³⁰ When her father passed away in 2010 it was difficult for both her and her mother, but the loss brought them closer together.³³¹ They were always in contact and Miriam would often stay with Debbie for up to a week at a time. Debbie would text her mother each night to let her know she was home safely.³³²
- 32.189 Debbie was an integral part of the team at Holland Park Opera. She was well-loved by staff, performers and patrons not just because she looked after them, but because she was always interested in them and their lives.³³³ Holland Park Opera laid a stone at the theatre in Debbie's memory.³³⁴
- 32.190 Debbie's kindness touched the lives of many people; her mother believes that she was so positive not because of money or material things, but because she had her freedom, she did what she wanted to do and she loved people.³³⁵

³²¹ Commemoration hearing 23 May 2018 [CH3/34/19].

³²² Commemoration hearing 22 May 2018 [CH2/7/22-25].

³²³ Commemoration hearing 22 May 2018 [CH2/17/7].

³²⁴ Commemoration hearing 22 May 2018 [CH2/8/5-14].

³²⁵ Commemoration hearing 22 May 2018 [CH2/8/17-18].

³²⁶ Commemoration hearing 22 May 2018 [CH2/9/2-4].

³²⁷ Commemoration hearing 22 May 2018 [CH2/9/25-10/7].

³²⁸ Commemoration hearing 22 May 2018 [CH2/10/8-10].

³²⁹ Commemoration hearing 22 May 2018 [CH2/8/9-10].

³³⁰ Commemoration hearing 22 May 2018 [CH2/10/15-17].

³³¹ Commemoration hearing 22 May 2018 [CH2/12/12-17].

³³² Commemoration hearing 22 May 2018 [CH2/13/2-3].

³³³ Commemoration hearing 22 May 2018 [CH2/14/22-15/2].

³³⁴ Commemoration hearing 22 May 2018 [CH2/15/2-4].

³³⁵ Commemoration hearing 22 May 2018 [CH2/15/24-16/5].

Gary Maunders

- 32.191 Gary Maunders was visiting Debbie Lamprell on 14 June 2017. He was born on 4 January 1960 in London, the eldest of four children. He had lived in North Kensington all his life. He was 57 years old.
- 32.192 On 23 May 2018, Gary's former partner, Ana Pumar, and his nieces, Kenita and Channel Spence, presented their commemorations. A commemoration on behalf of his sister, Tammie Maunders, was presented on 30 May 2018.³³⁶
- 32.193 Tammie addressed her brother directly, telling him: "I hope you're with Dad, still nagging his ear off like you always did."³³⁷ Gary was a great family man. Tammie said that their mum had always supported him and had his back and Tammie herself loved the bond he shared with her own children. She remembered Gary's funny ways and stories³³⁸ and his love of Marvin Gaye.³³⁹
- 32.194 Ana and Gary had two children together.³⁴⁰ She recalled how their early years as a couple were filled with happiness and laughter.³⁴¹ Gary was a devoted and loving father,³⁴² who considered his children to be his greatest achievement in life.³⁴³ He was physically and verbally very affectionate to his children, and they knew how much he loved them as a result.³⁴⁴ Gary was the life and soul of everything he did and everywhere he went.³⁴⁵ He was a devoted Manchester United fan³⁴⁶ with a great sense of humour.³⁴⁷
- 32.195 Gary's nieces remembered their uncle as a man with values and a huge character. They spoke of how involved he had been in their lives when they were growing up and the bonds he formed with the next generation of the family. A talented footballer in his youth, Gary became a painter and decorator. He was outgoing and quick-witted. His nieces remembered how they were sometimes on the receiving end of Gary's jokes. They shared memories of how the entire family would spend Christmas together and the family tradition of sitting around the kitchen table playing cards together. They fondly recalled how Gary took pride in his appearance and never liked to see a crease in his clothing. He would take great care to dress smartly and used to joke, "I've still got it, ain't I?" Similarly, he took great care to keep his home neat and tidy.³⁴⁸
- 32.196 In their video commemoration, Gary's nieces interviewed his mother. She and Gary had been very close and spoke every day. Gary's mother said that he would make sure that everyone around him was always laughing; she felt that "you could never be sad, not when he was around".³⁴⁹

³³⁶ Commemoration hearing 30 May 2018 [CH7/65/2].

³³⁷ Commemoration hearing 30 May 2018 [CH7/65/15-16].

³³⁸ Commemoration hearing 30 May 2018 [CH7/66/5].

³³⁹ Commemoration hearing 30 May 2018 [CH7/66/23].

³⁴⁰ Commemoration hearing 23 May 2018 [CH3/26/22].

³⁴¹ Commemoration hearing 23 May 2018 [CH3/27/1-2].

³⁴² Commemoration hearing 23 May 2018 [CH3/27/17-18].

³⁴³ Commemoration hearing 23 May 2018 [CH3/27/16-17].

³⁴⁴ Commemoration hearing 23 May 2018 [CH3/27/20-22].

³⁴⁵ Commemoration hearing 23 May 2018 [CH3/27/7].

³⁴⁶ Commemoration hearing 23 May 2018 [CH3/27/4-6].

³⁴⁷ Commemoration hearing 23 May 2018 [CH3/27/9].

³⁴⁸ Commemoration hearing 23 May 2018 [CH3/28/17].

³⁴⁹ Commemoration hearing 23 May 2018 [CH3/28/17].

7 Floor 18

Berkti and Biruk Haftom (Flat 155)

- 32.197 Berkti Haftom and her son, Biruk lived in Flat 155 with Berkti's partner, Michele Chiapetto. He was out on the night of the fire. Berkti's lodger, Yehualashet Enyew, survived the fire.³⁵⁰
- 32.198 Berkti was born on 2 November 1987 in Asmara, Eritrea. She was 29 years old. Biruk, was born on 27 April 2005. He was 12 years old.
- 32.199 A commemoration for Berkti and Biruk was given on behalf of their family on 29 May 2018. Berkti was one of eleven children growing up in Eritrea.³⁵¹ She was very young when she gave birth to her son Nahome and had to flee Eritrea as a result of the war in 1998.³⁵² Berkti's mother raised Nahome in Eritrea from the age of two.³⁵³ Berkti settled in London, where her son Biruk was born.³⁵⁴ She had a strong work ethic and most recently had worked in catering in the NHS.³⁵⁵ Berkti's sisters, Negeste, Salam and Asiema also settled in the United Kingdom, where they became once again a close and loving family supporting each other.³⁵⁶
- 32.200 Berkti remained close to Nahome and spoke to him at least twice a week on the telephone whilst he was growing up. She sent money home to pay for his schooling, and Nahome recalled what a nice voice his mother had.³⁵⁷ After Berkti's mother died in 2016, she was hoping to bring Nahome to London to live with her, but the plan never came to fruition.³⁵⁸
- 32.201 Biruk spent most of his life living in Grenfell Tower. He went to the nursery school in Clarendon Walk and to school nearby.³⁵⁹ His aunts, Berkti's sisters, remember him playing with Lego cars, and how on occasions he would throw them all over the flat where they would all trip over them.³⁶⁰ He was close to all his aunts and would call each of them "mummy", greeting them with a smile and a hug when they came to pick him up from nursery school.³⁶¹
- 32.202 Biruk was described as having empathy for others, wise beyond his years and a very happy and contented little child.³⁶² He often talked of his brother, Nahome, and asked his mother if Nahome could come to live with them.³⁶³ His family described him as a promising boy close to his cousins and with lots of friends. Biruk dreamed of being a professional footballer, and he supported Chelsea.³⁶⁴ Biruk's aunts used to laugh because Biruk was "very British"; he did not like Eritrean food, and instead loved chicken and chips.³⁶⁵
- 32.203 Berkti was pregnant at the time of the fire.³⁶⁶ Biruk was delighted that his mother was pregnant and was looking forward to having another sibling.³⁶⁷

³⁵⁰ Semre witness statement [IWS00000954] p. 2.

³⁵¹ Commemoration hearing 29 May 2018 [CH6/56/24].

³⁵² Commemoration hearing 29 May 2018 [CH6/51/14-16]; [CH6/52/7-9].

³⁵³ Commemoration hearing 29 May 2018 [CH6/52/7].

³⁵⁴ Commemoration hearing 29 May 2018 [CH6/51/21-22].

³⁵⁵ Commemoration hearing 29 May 2018 [CH6/59/5-15].

³⁵⁶ Commemoration hearing 29 May 2018 [CH6/58/6-9].

³⁵⁷ Commemoration hearing 29 May 2018 [CH6/54/8-11].

³⁵⁸ Commemoration hearing 29 May 2018 [CH6/52/12-14].

³⁵⁹ Commemoration hearing 29 May 2018 [CH6/59/1-2].

³⁶⁰ Commemoration hearing 29 May 2018 [CH6/60/12-17].

³⁶¹ Commemoration hearing 29 May 2018 [CH6/60/17-19].

³⁶² Commemoration hearing 29 May 2018 [CH6/60/22-23].

³⁶³ Commemoration hearing 29 May 2018 [CH6/61/5-7].

³⁶⁴ Commemoration hearing 29 May 2018 [CH6/51/25]; [CH6/61/16-17].

³⁶⁵ Commemoration hearing 29 May 2018 [CH6/61/20-21].

³⁶⁶ Commemoration hearing 29 May 2018 [CH6/56/7].

³⁶⁷ Commemoration hearing 29 May 2018 [CH6/60/7-8].

Hamid Kani (Flat 154)

- 32.204 Hamid Kani lived in Flat 154. He was born on 24 January 1956 and was 61 years old.
- 32.205 On 29 May 2018, Masoud Shahabeddin read a commemoration for his cousin Hamid on behalf of their family.³⁶⁸
- 32.206 Hamid was born and brought up in Tehran, Iran, the youngest of four children. The baby of the family, he was adored by his mother and two older sisters and by all accounts he could wrap them around his little finger.³⁶⁹
- 32.207 Masoud described his cousin as someone who loved to make people laugh. Hamid was a real extrovert who enjoyed being surrounded by other people. His father was a shopkeeper and Masoud recalled the times when, growing up, he and Hamid would be left in charge of the shop whilst Hamid's father went out to buy more stock. Somehow, Hamid always tricked Masoud into doing all the work in the shop.³⁷⁰
- 32.208 The two cousins came to London in the 1970s to study. Once here, Hamid began to explore his love of the arts, acting and music. He went on to have a major role in the 1980s in comedies which were critical satires of the regime in Iran. The videos of these comedies became very popular in Iran and led to Hamid being blacklisted for some time by the Iranian government. He later changed careers, becoming a chef and sharing his love of cooking with customers in restaurants in London for many years.³⁷¹
- 32.209 Although London was Hamid's adopted home,³⁷² he always looked forward to his annual visit to Tehran to see his family, all of whom were very important to him.³⁷³ Knowing his love of Iran, Hamid's family ensured he was buried in his home country.³⁷⁴
- 32.210 Hamid was a happy and easy-going man. He used to say:
- "Everything's going to be all right in the end, and if it's not all right yet, it's because it's not the end".³⁷⁵
- 32.211 Masoud Shahabeddin told us that Hamid will always be remembered for his humour, his warmth, his smile, his love of family and his compassion for others.³⁷⁶

Isaac Paulos (Flat 153)

- 32.212 Isaac Paulos lived in Grenfell Tower with his mother Genet Shawo, his father Paulos Tekle, and his younger brother. He was born on 22 September 2011 at Chelsea and Westminster Hospital, London. He was 5 years old.

³⁶⁸ Commemoration hearing 29 May 2018 [CH6/69/8-10].

³⁶⁹ Commemoration hearing 29 May 2018 [CH6/69/19-23].

³⁷⁰ Commemoration hearing 29 May 2018 [CH6/69/23-70/4].

³⁷¹ Commemoration hearing 29 May 2018 [CH6/70/13-19].

³⁷² Commemoration hearing 29 May 2018 [CH6/70/24-25].

³⁷³ Commemoration hearing 29 May 2018 [CH6/71/14-15].

³⁷⁴ Commemoration hearing 29 May 2018 [CH6/72/3].

³⁷⁵ Commemoration hearing 29 May 2018 [CH6/71/3-6].

³⁷⁶ Commemoration hearing 29 May 2018 [CH6/70/4-6].

- 32.213 On 29 May 2018, Paulos Tekle³⁷⁷ together with a relative, Nardos,³⁷⁸ delivered a commemoration for Isaac. There was also a video tribute which featured other family members, including Isaac's mother Genet.³⁷⁹ Isaac's cousin Helen recited a poem she had written.³⁸⁰
- 32.214 Paulos explained that, in Amharic, Isaac meant "joy" and "love". Isaac was his "spitting image" and they were very close.³⁸¹ Isaac would always be the first person to welcome Paulos through the door when he got home. He would jump into his arms and give him a big hug.³⁸² Teachers commented that Isaac "adored his dad", and was proud that he spoke the same language as his mother. He referred to Ethiopia as "my country". Although Genet would say that Isaac was a Chelsea supporter, he was really an Arsenal fan like his father.³⁸³ Isaac was also close to his brother, who was only two years younger than him.³⁸⁴
- 32.215 Isaac was a talented boy³⁸⁵ who loved Taekwondo, swimming, and football. He enjoyed school and would not leave his seat without finishing his homework.³⁸⁶ Teachers recalled that he was especially gifted at maths and reading. He was the child who stood out in his year group, not only because of his intellectual capacity, but also his emotional maturity that could have taken him far in life.³⁸⁷
- 32.216 Isaac was very popular and loved spending time with his friends.³⁸⁸ Nardos remembered how, when visiting her family, Isaac never wanted to leave their house. Isaac and her brother would always come up with plans to trick their parents into letting Isaac stay longer.³⁸⁹ He used to make everyone laugh.
- 32.217 Judith Rashed, Isaac's teacher, read from Isaac's work: "I like to play outside and with the capes ... and I know how to go on the tunnel and the climbing frame... My favourite toys are cars." With his friends, Isaac enjoyed playing "It", football, and "Duck, Duck, Goose". He was either going to be Professor Isaac or a footballer. His parents and teachers reflected that, either way, Isaac had a bright future ahead of him. He was very special.³⁹⁰

Sakina Afrasehabi and Fatemeh Afrasiabi (Flat 151)

- 32.218 Sakina Afrasehabi was born on 4 April 1952 in Iran. She was 65 years old. She lived in Flat 151 in Grenfell Tower.³⁹¹ Her sister, Fatemeh Afrasiabi, was born on 15 November 1957 in Iran. She was 59 years old. Fatemeh was staying with her sister on the night of 13 June 2017.
- 32.219 Sakina's children gave commemorations for their mother on 29 May 2018 and 30 May 2018. On that day there was also a video commemoration for Fatemeh featuring her friends and family presented by her son, Mohammad Samimi.

³⁷⁷ Commemoration hearing 29 May 2018 [CH6/40/18].

³⁷⁸ Commemoration hearing 29 May 2018 [CH6/45/11].

³⁷⁹ Commemoration hearing 29 May 2018 [CH6/48/8].

³⁸⁰ Commemoration hearing 29 May 2018 [CH6/47/2-48/5].

³⁸¹ Commemoration hearing 29 May 2018 [CH6/40/21-24].

³⁸² Commemoration hearing 29 May 2018 [CH6/48/8].

³⁸³ Commemoration hearing 29 May 2018 [CH6/48/8].

³⁸⁴ Commemoration hearing 29 May 2018 [CH6/40/24-25].

³⁸⁵ Commemoration hearing 29 May 2018 [CH6/45/2].

³⁸⁶ Commemoration hearing 29 May 2018 [CH6/45/21-24].

³⁸⁷ Commemoration hearing 29 May 2018 [CH6/48/8].

³⁸⁸ Commemoration hearing 29 May 2018 [CH6/48/8].

³⁸⁹ Commemoration hearing 29 May 2018 [CH6/46/2-5].

³⁹⁰ Commemoration hearing 29 May 2018 [CH6/48/8].

³⁹¹ Mona Aghlani witness statement [IWS00000774] p. 1.

- 32.220 Nazanin Aghlani recalled that her mother, Sakina, had a happy childhood in Iran. One of six children, she was a bit of a tomboy with a mischievous sense of humour. As an adult she was able to travel in Europe.³⁹² Both Sakina and Fatemeh lived through the revolution and Iran-Iraq war in Iran, times where they faced bombings. Ultimately the family fled to Shiraz, a rural area of Iran, where they settled for some time and both sisters had children.³⁹³
- 32.221 Fatemeh's children spoke of the challenges the family faced in Shiraz. They were displaced and when their father found it difficult to find work, their hardworking mother would sometimes support the whole family from her income as a tailoress.³⁹⁴
- 32.222 Fatemeh loved her children very much and would do anything for them. Her daughter Masoumeh remembered her mother buying her a doll as a present when she was a little girl. She would sleep with the doll next to her because it made her remember the smile her mother wore when she gave it to her.³⁹⁵
- 32.223 Sakina moved to the United Kingdom in 1997 and saw it as a new beginning.³⁹⁶ Her children recalled that as well as being kind and softly spoken,³⁹⁷ she was a very charitable person who gave to those in need.³⁹⁸ On one occasion, Sakina was visiting a friend's neighbour on a visit to Iran, when she noticed the family did not have a working fridge. She purchased one for them as well as several other household goods.³⁹⁹
- 32.224 Sakina was an excellent cook, and her daughter, Nazanin, spoke of her many "secret recipes".⁴⁰⁰ Nazanin and her sister Mona especially enjoyed their mother's fish stew, an Iranian delicacy. Sakina also cooked for her neighbours in Grenfell Tower, and she soon became very popular.⁴⁰¹ Her daughter, Shiva, described her as "everyone's grandma".⁴⁰² Nazanin recalled that initially their mother was not pleased to be living in Grenfell Tower, but after redecorating her flat and settling in, she came to enjoy the height of the building, even purchasing binoculars so that everyone could enjoy the view.⁴⁰³
- 32.225 Shiva described how close Sakina was to her sister, Fatemeh, who had also moved to the United Kingdom. The two sisters were always together. Sakina had even bought a special seat which she had placed in front of her large windows so that they could sit together, chatting, enjoying snacks and looking out across London. Her mother described it as being better than any TV show.⁴⁰⁴
- 32.226 Fatemeh loved creativity and the arts; she was an excellent painter, but also used to make decorative flowers and dolls. Fatemeh's daughter, Raheleh, recalled many happy hours spent making things with her mother in the evenings. Fatemeh encouraged her grandchildren to be expressive and creative. Her granddaughters would draw designs for new Barbie Doll outfits, which Fatemeh would then make for them. Fatemeh's daughter, Sara, said that her mother had a beautiful voice and used to sing at home whilst doing the chores.⁴⁰⁵

³⁹² Commemoration hearing 30 May 2018 [CH7/39/5-13].

³⁹³ Commemoration hearing 30 May 2018 [CH7/39/16-21].

³⁹⁴ Commemoration hearing 30 May 2018 [CH7/53/12].

³⁹⁵ Commemoration hearing 30 May 2018 [CH7/53/12].

³⁹⁶ Commemoration hearing 30 May 2018 [CH7/40/2-5].

³⁹⁷ Commemoration hearing 29 May 2018 [CH6/66/5].

³⁹⁸ Commemoration hearing 30 May 2018 [CH7/45/2-4].

³⁹⁹ Commemoration hearing 30 May 2018 [CH7/45/4-11].

⁴⁰⁰ Commemoration hearing 30 May 2018 [CH7/44/4-5].

⁴⁰¹ Commemoration hearing 30 May 2018 [CH7/44/7-13].

⁴⁰² Commemoration hearing 29 May 2018 [CH6/66/23/17-24].

⁴⁰³ Commemoration hearing 30 May 2018 [CH7/42/12-43/23].

⁴⁰⁴ Commemoration hearing 29 May 2018 [CH6/65/17-23].

⁴⁰⁵ Commemoration hearing 30 May 2018 [CH7/53/12].

- 32.227 Sakina and Fatemeh had a large and loving family who spoke fondly of their memories of them both.

8 Floor 17

Vincent Chiejina (Flat 144)

- 32.228 Vincent Chiejina lived in Flat 144. He was born on 1 June 1957 in Nigeria and was 60 years old. A video commemoration prepared by his sister, Obi Chiejina, was shown on 25 May 2018.
- 32.229 Vincent spent his early years in Nigeria before travelling to the United Kingdom with his mother Mary and his sister Maria.⁴⁰⁶
- 32.230 As a teenager he enjoyed science fiction and was an avid fan of Star Trek, making sure to watch it every Saturday. At school in Ramsgate, he excelled at mathematics and went on to study Electrical and Electronic Engineering at Sheffield University in the 1970s.⁴⁰⁷
- 32.231 Obi spoke of Vincent's kind nature, remembering that when she broke her leg as a child he went out and bought her a big bar of chocolate, but unfortunately of the wrong kind! He used to look after his sisters when their mother had to work as a nurse at night. He made them brush their teeth and tucked them in nicely.⁴⁰⁸
- 32.232 These acts of kindness permeated all aspects of Vincent's life. He was someone who was good at looking after people who were vulnerable. He would never reject anyone and was adept at spotting ways in which others needed support, quietly making them feel good about themselves. Vincent was a member of the 50+ Open Age group in North Kensington and was particularly good at making new members feel welcome. When any new person came into the room, wherever he was Vincent would stand up and offer his chair to them to ensure they felt included.⁴⁰⁹
- 32.233 Because of, and in spite of, his own vulnerabilities, Vincent was "ahead of the curve"; he made sure he guided other people to their paths. For that, his family thanked him.⁴¹⁰

Khadija Khalloufi (Flat 143)

- 32.234 Khadija Khalloufi lived in Grenfell Tower with her husband Sabah Abdullah. She was born on 6 September 1964 and was 52 years old.
- 32.235 On 25 May 2018, Sabah Abdullah introduced a video commemoration that he had prepared for his wife. On 30 May 2018, a commemoration was read on behalf of her brother, Karim Khalloufi.⁴¹¹
- 32.236 Khadija was the eldest of seven siblings and grew up in Mohammedia in Morocco.⁴¹² Her younger siblings thought of Khadija as a second mother because of her big heart and impressive sense of responsibility.⁴¹³ After finishing her schooling she obtained a degree in

⁴⁰⁶ Commemoration hearing 25 May 2018 [CH5/4/15].

⁴⁰⁷ Commemoration hearing 25 May 2018 [CH5/4/15].

⁴⁰⁸ Commemoration hearing 25 May 2018 [CH5/4/15].

⁴⁰⁹ Commemoration hearing 25 May 2018 [CH5/4/15].

⁴¹⁰ Commemoration hearing 25 May 2018 [CH5/4/15].

⁴¹¹ Commemoration hearing 30 May 2018 [CH7/55/6].

⁴¹² Commemoration hearing 30 May 2018 [CH7/55/20-21].

⁴¹³ Commemoration hearing 30 May 2018 [CH7/56/6-9].

accountancy and commerce in Casablanca before taking a job as manager of a pharmacy in Mohammedia.⁴¹⁴

- 32.237 Khadija had ambitions to travel and work abroad and after several years moved to live with her uncle in Holland, before settling in London.⁴¹⁵ She found her first few years in the United Kingdom a challenge, not least because of the language barrier.⁴¹⁶ It was at a centre which assisted immigrants to integrate into society by offering them studies in English that Khadija met her future husband, Sabah Abdullah, who was originally from Iraq.⁴¹⁷
- 32.238 Sabah fondly remembered how Khadija would look after everyone. His two children thought of her as their own mother; to them, he said, she was more than an angel. Khadija also supported Sabah's mother when she was unwell, often cooking and caring for her. He shared video footage showing Khadija painting their home in Grenfell Tower. Khadija would not let Sabah do it, because she thought he was too clumsy.⁴¹⁸
- 32.239 Khadija and Sabah travelled regularly to see her family and friends across Europe.⁴¹⁹ She made sure she visited her family in Morocco two or three times a year.⁴²⁰ Her brother Karim recalled that, despite being a strong, independent woman, Khadija never ceased to help her family emotionally or financially, and worked hard to support them in whatever way she could.⁴²¹ Sabah described Khadija as someone who would make everyone around her feel comfortable and who loved to make others laugh. She was a unique person.⁴²²

Kamru Miah, Rabeya Begum, Mohammed Hamid, Mohammed Hanif and Husna Begum (Flat 142)

- 32.240 Kamru Miah, Rabeya Begum, Mohammed Hamid, Mohammed Hanif and Husna Begum lived in Flat 142. Kamru and Rabeya's oldest son, Mohammed Hakim, lived nearby in London, but his wife Farhana lived with his family in Flat 142. She was not present on the night of the fire.⁴²³
- 32.241 Kamru Miah was born on 12 August 1937 in Sylhet, Bangladesh. He was 79 years old. He moved to the United Kingdom in 1963. Kamru was a retired baker and Tandoori chef.⁴²⁴ Rabeya Begum was born on 15 November 1952 in Bangladesh. She was 64 years old. She came to London after marrying Kamru and was a housewife raising the couple's four children.⁴²⁵
- 32.242 Mohammed Hamid, born on 19 January 1989, was 28 years old. Mohammed Hanif, born on 20 February 1991, was 26 years old. Husna Begum, born on 4 February 1995, was 22 years old.
- 32.243 On 24 May 2018, Mohammed Hakim gave a commemoration for his parents and three siblings. He explained that his father had moved from Bangladesh to London in 1963 in the hope of a better life.⁴²⁶ There was nothing more important to Kamru than his family and his

⁴¹⁴ Commemoration hearing 30 May 2018 [CH7/56/17-23].

⁴¹⁵ Commemoration hearing 30 May 2018 [CH7/57/5-16].

⁴¹⁶ Commemoration hearing 30 May 2018 [CH7/57/17-20].

⁴¹⁷ Commemoration hearing 25 May 2018 [CH5/52/1].

⁴¹⁸ Commemoration hearing 25 May 2018 [CH5/52/1].

⁴¹⁹ Commemoration hearing 25 May 2018 [CH5/52/1].

⁴²⁰ Commemoration hearing 30 May 2018 [CH7/59/21-25].

⁴²¹ Commemoration hearing 30 May 2018 [CH7/60/14-18].

⁴²² Commemoration hearing 25 May 2018 [CH5/52/1].

⁴²³ Hakim first witness statement [IWS00000019] pp. 1-3.

⁴²⁴ Commemoration hearing 24 May 2018 [CH4/20/7-11].

⁴²⁵ Commemoration hearing 24 May 2018 [CH4/23/7-9].

⁴²⁶ Commemoration hearing 24 May 2018 [CH4/20/7-10].

religion.⁴²⁷ He gave his children the best of everything and liked to take them to parks around Chelsea and the neighbouring area while they were growing up. On those trips he would always buy his children more ice cream than they could eat.⁴²⁸

- 32.244 Kamru was someone with a heart of gold who made everyone his friend. He had a gentle and sweet nature, was well-respected by his family and in his community, and would always help anyone in need.⁴²⁹ He especially loved both nature programmes and action movies; James Bond films were a particular favourite, especially those featuring Sean Connery or Roger Moore.⁴³⁰
- 32.245 Hakim recalled how his father was not only good to his children, but also to his wife, Rabeya,⁴³¹ who in turn was loyal and loving to Kamru, not leaving his side when he fell ill.⁴³²
- 32.246 Hakim described Rabeya as a generous, caring and loving mother.⁴³³ She was the person the children would run to after a fall and who would “kiss everything better” and “scare away the monsters from under our bed with a giggle”. Hakim and his siblings always felt safe with Rabeya.⁴³⁴ As adults they would go to her for advice and wisdom and she was always able to give them individual attention and care.⁴³⁵
- 32.247 Rabeya was also a fantastic cook, who would add her magic touch to each dish she created. Hakim’s favourite was lamb curry and he told us that his mum would make it the best. She filled the flat with her laughter and jokes, and had a beaming smile that could put anyone at their ease.⁴³⁶
- 32.248 Speaking of his brother Hamid, Hakim recalled favourite moments from their childhood, from looking for ants and building them fortresses with moss and sticks to riding in their cousin’s car together as teenagers. Hamid had a fun-loving personality and was a fascinating person to talk to.⁴³⁷
- 32.249 Hamid was his mother’s friend and his father’s guardian angel. He cared for Kamru following his strokes⁴³⁸ and always took the time to make sure his mother was OK and to laugh with her. He cared deeply for all his family; his brothers were his best friends, and his sister Husna was his buddy. He could make them all laugh for hours.⁴³⁹ Hamid was a loyal friend with a lion heart. To Hakim, it sometimes felt like Hamid was the older brother because of the wise advice he offered.⁴⁴⁰
- 32.250 Hakim also told us how he benefited from the friendly advice of his younger brother, Hanif.⁴⁴¹ Hanif had a gentle and kind approach to those around him and like his mother he quickly

⁴²⁷ Commemoration hearing 24 May 2018 [CH4/21/5-7].

⁴²⁸ Commemoration hearing 24 May 2018 [CH4/21/13-18].

⁴²⁹ Commemoration hearing 24 May 2018 [CH4/22/2-12].

⁴³⁰ Commemoration hearing 24 May 2018 [CH4/21/19-22/1].

⁴³¹ Commemoration hearing 24 May 2018 [CH4/21/5].

⁴³² Commemoration hearing 24 May 2018 [CH4/24/6-8].

⁴³³ Commemoration hearing 24 May 2018 [CH4/23/10-11].

⁴³⁴ Commemoration hearing 24 May 2018 [CH4/23/13-18].

⁴³⁵ Commemoration hearing 24 May 2018 [CH4/23/18-19].

⁴³⁶ Commemoration hearing 24 May 2018 [CH4/23/21-24/4].

⁴³⁷ Commemoration hearing 24 May 2018 [CH4/24/21-25/2].

⁴³⁸ Commemoration hearing 24 May 2018 [CH4/25/3-9].

⁴³⁹ Commemoration hearing 24 May 2018 [CH4/25/11-15].

⁴⁴⁰ Commemoration hearing 24 May 2018 [CH4/25/17-23].

⁴⁴¹ Commemoration hearing 24 May 2018 [CH4/26/14-16].

made others feel comfortable and at their ease.⁴⁴² Hanif was passionately committed to his faith and to God, which shone through in his commitment to helping others in need.⁴⁴³

- 32.251 Hanif was also very creative: he had a talent for drawing and particularly loved animation. He often spent time making beautiful images for his family. Not only did he love creating his own animations, he enjoyed watching Marvel and sci-fi films. He also enjoyed playing PlayStation, sometimes with his brothers.⁴⁴⁴
- 32.252 Husna was the youngest of the siblings. Hakim recalled bringing her home from the hospital after she was born and holding her in his arms; he was full of joy at having a baby sister.⁴⁴⁵ He described Husna as the epitome of adventure and spirit; one of her ambitions was to travel and see the world.⁴⁴⁶ She learned about the world around her through studying history, but also enjoyed creative writing.⁴⁴⁷ She had a cheeky sense of humour, just like her parents and brothers.⁴⁴⁸
- 32.253 Husna was a thoughtful friend and sister, never forgetting an anniversary or birthday.⁴⁴⁹ Like her mother she was an excellent cook. She could always get a new recipe right first time and if anyone ever ate her food, they would always ask for more.⁴⁵⁰ Hakim said that Husna was the best sister anyone could ask for.⁴⁵¹
- 32.254 Hakim ended his commemoration by explaining how proud he is that his family remained so close in their final moments: his siblings stood by his elderly parents, rather than attempting to escape themselves. His family were the bravest amongst everyone he knows.⁴⁵²

9 Floor 16

Joseph Daniels (Flat 135)

- 32.255 Joseph Daniels moved into Flat 135 with his family in 1983. He was born on 10 February 1948 and was 69 years old. In June 2017, Joseph Daniels shared Flat 135 with his son Samuel who was his carer.⁴⁵³
- 32.256 Samuel Daniels gave a short commemoration for his father on 21 May 2018. He said that Grenfell Tower had been his father's only home since he moved to London in 1982.⁴⁵⁴

Sheila (Flat 132)

- 32.257 Sheila lived alone in Flat 132 on floor 16 of Grenfell Tower. She was born on 17 September 1932 and was 84 years old.
- 32.258 Sheila's family did not wish to give a commemoration in May 2018.

⁴⁴² Commemoration hearing 24 May 2018 [CH4/26/11-16].

⁴⁴³ Commemoration hearing 24 May 2018 [CH4/26/17-18].

⁴⁴⁴ Commemoration hearing 24 May 2018 [CH4/26/19-25].

⁴⁴⁵ Commemoration hearing 24 May 2018 [CH4/27/21-25].

⁴⁴⁶ Commemoration hearing 24 May 2018 [CH4/27/9-11].

⁴⁴⁷ Commemoration hearing 24 May 2018 [CH4/27/12-13].

⁴⁴⁸ Commemoration hearing 24 May 2018 [CH4/27/19-21].

⁴⁴⁹ Commemoration hearing 24 May 2018 [CH4/27/18-19].

⁴⁵⁰ Commemoration hearing 24 May 2018 [CH4/27/13-17].

⁴⁵¹ Commemoration hearing 24 May 2018 [CH4/28/1-2].

⁴⁵² Commemoration hearing 24 May 2018 [CH4/28/9-21].

⁴⁵³ Daniels first witness statement [IWS00000608] pp. 1-5.

⁴⁵⁴ Commemoration hearing 21 May 2018 [CH1/49/14-15].

10 Floor 15

Steven Power (Flat 122)

- 32.259 Steven Power lived in Flat 122 on floor 15 with his children, Bobby and Rebecca, and their three dogs, Stevie, Diva and Jess.⁴⁵⁵ Known as Steve, he was born on 18 August 1953 in London.⁴⁵⁶ He was 63 years old.
- 32.260 On 25 May 2018, Steve's former partner, Claudia Davis, and his daughter, Sherrie Power, gave a commemoration on behalf of his family.⁴⁵⁷
- 32.261 Steve's family originated from Waterford in Ireland.⁴⁵⁸ However, he grew up in Ladbroke Grove and by June 2017 had lived in Grenfell Tower for 32 years.⁴⁵⁹ He was a retired driver and a keen DJ.⁴⁶⁰ He had five children: Wayne Power-Davis, Craig Power, Sherrie Power, Bobby Ross and Rebecca Ross.⁴⁶¹
- 32.262 Steve's love of music was a dominant factor in his life. His daughter Sherrie remembered how friends and family would often come round to listen to music, eat good food and enjoy themselves.⁴⁶² Steve exposed his children to a wide variety of music. When DJ'ing he would shout things such as "rewind" and "Rastafari", which led his children to tell him he was a West Indian man trapped in an Irishman's body.⁴⁶³
- 32.263 Steve also loved to fish. He would fish along the canal in Ladbroke Grove and always took his radio and a flask of Tetleys with him, because he believed that that was the only tea anyone should drink. He loved to tell stories of the fish he had caught and his front room was filled with photographs of his catches over the years.⁴⁶⁴
- 32.264 Steve enjoyed playing jokes. Sherrie recalled how he particularly loved winding up his friend JJ with her.⁴⁶⁵ Despite his pranks, Steve was a genuine man with a good heart.⁴⁶⁶ In addition to his children, Steve considered his dogs to be part of the family. He was given Diva by a friend because her previous owners had not treated her properly. Steve took it upon himself to look after Diva. As a result of his care all three dogs were extremely friendly and liked to socialise with people. He even became known locally as "the man with the dogs".⁴⁶⁷
- 32.265 Sherrie described her father as "just high on life" and nothing short of a character: someone about whom everyone always had a story to tell.⁴⁶⁸ She said that Steve was like Marmite; he was outspoken and direct and would fight for his family and what he believed was right.⁴⁶⁹ Sherrie had no doubt that, if Steve were here, he would be chairman of Grenfell United:

"He was a man of the people, especially for the neighbours and residents of Grenfell."⁴⁷⁰

⁴⁵⁵ Ross witness statement [IWS00001036] p. 5.

⁴⁵⁶ Commemoration hearing 25 May 2018 [CH5/106/19].

⁴⁵⁷ Commemoration hearing 25 May 2018 [CH5/104/20-24].

⁴⁵⁸ Commemoration hearing 25 May 2018 [CH5/106/19-22].

⁴⁵⁹ Commemoration hearing 25 May 2018 [CH5/111/16-18].

⁴⁶⁰ Commemoration hearing 25 May 2018 [CH5/107/3-8].

⁴⁶¹ Commemoration hearing 25 May 2018 [CH5/104/20-24].

⁴⁶² Commemoration hearing 25 May 2018 [CH5/107/9-13].

⁴⁶³ Commemoration hearing 25 May 2018 [CH5/107/17-24].

⁴⁶⁴ Commemoration hearing 25 May 2018 [CH5/110/9-23].

⁴⁶⁵ Commemoration hearing 25 May 2018 [CH5/108/9-12].

⁴⁶⁶ Commemoration hearing 25 May 2018 [CH5/112/2-3].

⁴⁶⁷ Commemoration hearing 25 May 2018 [CH5/109/11-22].

⁴⁶⁸ Commemoration hearing 25 May 2018 [CH5/108/9]; [CH5/109/24-110/2].

⁴⁶⁹ Commemoration hearing 25 May 2018 [CH5/108/17-109/10]; [CH5/112/1-2].

⁴⁷⁰ Commemoration hearing 25 May 2018 [CH5/111/22-112/10].

11 Floor 14

Zainab Deen and Jeremiah Deen (Flat 115)

- 32.266 Zainab Deen lived in Flat 115 with her son, Jeremiah. She was born on 25 May 1985 in Sierra Leone.⁴⁷¹ She was 32 years old. Jeremiah was born on 4 December 2014 at Chelsea and Westminster Hospital, London.⁴⁷²
- 32.267 On 23 May 2018 a commemoration for Zainab and Jeremiah was read on behalf of Zainab's parents, Zainu and Hannah.⁴⁷³
- 32.268 Zainab grew up in Freetown, the capital of Sierra Leone; her ambitions were to travel abroad and to become a pop star.⁴⁷⁴ She achieved the former after she finished school and moved to the United Kingdom aged 16.⁴⁷⁵
- 32.269 The family described how Zainab "had it all": she had a lively personality and a great sense of humour, enjoyed by all who met her. She was a smart, warm, outgoing and caring person. Zainab came from a loving family, in which she had a special place as her grandparents' first grandchild.⁴⁷⁶
- 32.270 In a message to his daughter, Zainu told her that he was so proud to be able to call her his daughter and that the family were grateful for the brief time they had had with her.⁴⁷⁷
- 32.271 Zainab's son, Jeremiah, was two and a half years old at the time of the fire. He attended Clare Garden Nursery and was loved by all.⁴⁷⁸ The family recalled how he was overprotected by his mother, who treasured and adored him.⁴⁷⁹
- 32.272 Jeremiah loved to explore and go on adventures and enjoyed playing football. He was a very loving and handsome little boy, who was full of life and brought his family much happiness.⁴⁸⁰
- 32.273 Zainab and Jeremiah's family said how glad they are that Zainab and Jeremiah are together and that they are sure Zainab will continue to keep Jeremiah safe, just as she protected him in life.⁴⁸¹

Mohammad Alhajali (Flat 112)

- 32.274 Mohammad Alhajali lived in Flat 112 with his brother, Omar Alhaj Ali, and their childhood friend, Mahmoud Al-Karad.⁴⁸²
- 32.275 Mohammad was born on 27 November 1993 in Damascus, Syria. He was 23 years old. In June 2017 he was working while also studying engineering at university.⁴⁸³

⁴⁷¹ Commemoration hearing 23 May 2018 [CH3/18/23].

⁴⁷² Commemoration hearing 23 May 2018 [CH3/19/20-22].

⁴⁷³ Commemoration hearing 23 May 2018 [CH3/17/19-18/7].

⁴⁷⁴ Commemoration hearing 23 May 2018 [CH3/18/24-19/2].

⁴⁷⁵ Commemoration hearing 23 May 2018 [CH3/19/2-3].

⁴⁷⁶ Commemoration hearing 23 May 2018 [CH3/19/3-11].

⁴⁷⁷ Commemoration hearing 23 May 2018 [CH3/19/12-18].

⁴⁷⁸ Commemoration hearing 23 May 2018 [CH3/19/19-25].

⁴⁷⁹ Commemoration hearing 23 May 2018 [CH3/19/25-20/1].

⁴⁸⁰ Commemoration hearing 23 May 2018 [CH3/20/1-9].

⁴⁸¹ Commemoration hearing 23 May 2018 [CH3/20/9-14].

⁴⁸² Al-Karad witness statement [IWS00000821] p. 1; Alhaj Ali witness statement [IWS00000781] p. 1.

⁴⁸³ Commemoration hearing 29 May 2018 [CH6/75/17-19].

- 32.276 On 29 May 2018, Mohammad's brother Hashem Alhajali,⁴⁸⁴ his friend Mahmoud Al-Karad⁴⁸⁵ and Mohammad's father, Nidal Alhajali,⁴⁸⁶ gave a commemoration on behalf of Mohammad's entire family.
- 32.277 Mohammad grew up in Daraa, a small city in the south of Syria. He was the second eldest of five children. He had two brothers, Omar and Hashem, and two sisters, Kenda and Sham.⁴⁸⁷ Mohammad's father, Nidal, remembered how, even from a young age, Mohammad would naturally think of others. When he received his pocket money, he would buy four lollipops and give one to each of his siblings, rather than having any himself.⁴⁸⁸
- 32.278 Mohammad's brother, Hashem, spoke of how Mohammad always loved to be grown up. Even as a child he would want to wear suits to be like their father. Sometimes he would even put his father's suit on, despite it being far too big for him.⁴⁸⁹
- 32.279 Mohammad left Syria with his brother Omar and arrived in the UK in 2014.⁴⁹⁰ Omar explained that he and Mohammad were only a year apart in age and had one of those rare relationships where they could share absolutely everything.⁴⁹¹ Mohammad was close to his other family members as well. He spoke to his family in Syria every day, telling his sisters that he loved London, but that it was very cold compared to Syria.⁴⁹²
- 32.280 Mahmoud described Mohammad as good-natured, ambitious and a perfectionist. He hoped to become an engineer and build a life for his family in the United Kingdom.⁴⁹³
- 32.281 To that end he was engaged to be married to Amal Al Huthaifi, whom he had met at work. Amal recalled how Mohammad and his huge smile had made her look forward to going to work and how he had a real presence in any room he entered. Mohammad always supported and encouraged her. Even now, if she feels she cannot accomplish something, she thinks of Mohammad and knows that he would tell her she can do anything she wants.⁴⁹⁴
- 32.282 Mohammad's family's tribute to him painted a picture of a sociable, fun-loving and thoughtful person who was a big part of each of their lives. His mother, Heam, said of her son:

"He was distinguished in every way... his smile never leaves me."⁴⁹⁵

Denis Murphy (Flat 111)

- 32.283 Denis Murphy lived alone in Flat 111. He was born on 10 October 1960 at Queen Charlotte's Hospital in Hammersmith. He was 56 years old.
- 32.284 On 21 May 2018, Denis's sister, Anne Murphy, gave a commemoration on behalf of his family.⁴⁹⁶
- 32.285 Denis's mother was also called Anne. He was the eldest of her four children. As well as his sister, Denis had two brothers, Mick and Tim.

⁴⁸⁴ Commemoration hearing 29 May 2018 [CH6/73/2274/1].

⁴⁸⁵ Commemoration hearing 29 May 2018 [CH6/75/2-3].

⁴⁸⁶ Commemoration hearing 29 May 2018 [CH6/77/9-10].

⁴⁸⁷ Commemoration hearing 29 May 2018 [CH6/77/17-78/2].

⁴⁸⁸ Commemoration hearing 29 May 2018 [CH6/78/8-13].

⁴⁸⁹ Commemoration hearing 29 May 2018 [CH6/74/22].

⁴⁹⁰ Alhaj Ali witness statement [IWS00000781] p. 1.

⁴⁹¹ Commemoration hearing 29 May 2018 [CH6/74/22].

⁴⁹² Commemoration hearing 29 May 2018 [CH6/74/22].

⁴⁹³ Commemoration hearing 29 May 2018 [CH6/75/14-22].

⁴⁹⁴ Commemoration hearing 29 May 2018 [CH6/74/22].

⁴⁹⁵ Commemoration hearing 29 May 2018 [CH6/74/22].

⁴⁹⁶ Commemoration hearing 21 May 2018 [CH1/22/14-29/9].

- 32.286 The family lived in North Kensington until 1968. They then moved to Dorking and subsequently Gravesend. The family returned to West London in 1977.⁴⁹⁷ At school, Denis excelled in history and maths, but his true passion was for sports, in particular football, cross-country and distance running. He ran for his school and district and won many medals and trophies.⁴⁹⁸
- 32.287 Anne recounted how Denis's running skills came in handy outside school too. Once, when Denis was just 10, his brother Mick lost his bus fare. Denis gave Mick his bus money and then ran the five mile journey home.⁴⁹⁹ To his siblings, Denis was a caring big brother. As their father was not in their lives, Denis took on additional responsibility in the family. He had had a very strong set of values, which he not only adhered to himself, but instilled in his siblings, including good manners, respect for others, to help and care for others and to love each other. Anne felt that Denis had nurtured and taught his siblings to become the adults they are today.⁵⁰⁰
- 32.288 Denis had left school by the time the family moved back to West London. He had trials with Crystal Palace and Charlton Athletic football clubs but did not become a professional footballer. He worked as a painter and decorator until his health forced him to retire.⁵⁰¹
- 32.289 Aged 22, Denis met his future wife, Tracey and in 1984 they moved into Grenfell Tower. Their only child, Peter, was born in 1989. The family lived in Mitcham and Tooting while Peter was young. After Denis and Tracey amicably separated, he moved back to Grenfell Tower in 1997, where he remained for the next 20 years.⁵⁰²
- 32.290 Denis was extremely close to his family; he would talk to or visit his mother daily and he would speak to his son and his siblings at least once a week. His sister Anne recalled how he would always end his calls to her with "Love you, sis".⁵⁰³
- 32.291 Denis's keen interest in sports continued into adulthood. He played Sunday League football into his thirties and though health problems stopped him playing sport in later life,⁵⁰⁴ he continued to help out at his local boxing club.⁵⁰⁵ Denis was an avid Chelsea supporter and even travelled to Europe several times to see them play. He had many light-hearted debates with his son Peter about their respective clubs and he always took great delight in Chelsea beating Peter's team, Tottenham.⁵⁰⁶
- 32.292 Many people around Denis benefited from his caring nature. Not only was he considered the "heart" of the Murphy family,⁵⁰⁷ always putting others first and regularly carrying out errands for his elderly mother who lived nearby,⁵⁰⁸ but he also carried out voluntary work within the local community. He worked with adults with learning disabilities, supporting them to take part in activities in the community.⁵⁰⁹ To his family Denis was their hero; there was no better role model.⁵¹⁰

⁴⁹⁷ Commemoration hearing 21 May 2018 [CH1/22/24-24/5].

⁴⁹⁸ Commemoration hearing 21 May 2018 [CH1/23/3-13].

⁴⁹⁹ Commemoration hearing 21 May 2018 [CH1/23/14-18].

⁵⁰⁰ Commemoration hearing 21 May 2018 [CH1/23/19-24/2].

⁵⁰¹ Commemoration hearing 21 May 2018 [CH1/24/3-14].

⁵⁰² Commemoration hearing 21 May 2018 [CH1/24/20-25/7].

⁵⁰³ Commemoration hearing 21 May 2018 [CH1/27/11-18].

⁵⁰⁴ Commemoration hearing 21 May 2018 [CH1/24/11-14].

⁵⁰⁵ Commemoration hearing 21 May 2018 [CH1/27/3-5].

⁵⁰⁶ Commemoration hearing 21 May 2018 [CH1/26/19-27/2].

⁵⁰⁷ Commemoration hearing 21 May 2018 [CH1/25/16].

⁵⁰⁸ Commemoration hearing 21 May 2018 [CH1/27/7-10].

⁵⁰⁹ Commemoration hearing 21 May 2018 [CH1/24/15-19].

⁵¹⁰ Commemoration hearing 21 May 2018 [CH1/28/7-9].

12 Floor 11

Ali Yawar Jafari (Flat 86)

- 32.293 Ali Yawar Jafari moved into Flat 86 with his wife Fatima, and daughters Maria and Nadia Jafari in 2003.
- 32.294 He was born on 1 January 1936 in Kandahar, Afghanistan and was 81 years old. The family built a happy life in London and Ali enjoyed living here.⁵¹¹
- 32.295 On 23 May 2018, Fatima and her children shared their memories of Ali Yawar in a video commemoration.⁵¹² His daughter, Maria, and son, Hamid, also spoke of the impact of the loss of their father.⁵¹³
- 32.296 Fatima said Ali Yawar was the “love of my life”. Nadia, Maria and Hamid described their father as a calm and gentle man. Maria, in particular, remembered that he would never refuse his children anything when they were growing up. He was happiest when his family were together. Mealtimes were a big part of family life and were often filled with laughter.⁵¹⁴
- 32.297 Ali Yawar loved travelling; he visited Iran and Germany and took a holiday in America with his son Hamid in 2012. Together with his wife Fatima he was able to make the Hajj pilgrimage to Mecca. Fatima recalled how, the day after the fire, she met a couple who told her that Ali had brought their son, who had had cancer at the time, some holy water and dates from that trip. They told her they had always remembered his kindness.⁵¹⁵
- 32.298 Ali Yawar was also fond of animals and gardening. Fatima remembered one occasion where he saw a pigeon with string tied around its legs. He waited for days to catch it and cut the string off. He told his family that he was pleased the pigeon was now free to go wherever it wanted.⁵¹⁶
- 32.299 Ali Yawar was someone who could communicate with everyone, despite language barriers, because of his kindness and generosity towards others. He would always put others before himself. He had a particularly close bond with his grandson and Hamid told us that, when he holds his son now, he thinks of his father.⁵¹⁷
- 32.300 The family are proud of Ali Yawar’s desire to wake and warn his neighbours on the night of the fire and Hamid explained that they are glad that every year people around the world will remember him and know that he was a good person.⁵¹⁸

Abdeslam Sebbar (Flat 81)

- 32.301 Abdeslam Sebbar lived alone in Flat 81 Grenfell Tower. He was born on 11 September 1939 and was 77 years old.
- 32.302 His family did not wish to give a commemoration for him in May 2018.

⁵¹¹ Commemoration hearing 23 May 2018 [CH3/22/25].

⁵¹² Commemoration hearing 23 May 2018 [CH3/22/25].

⁵¹³ Commemoration hearing 23 May 2018 [CH3/22/10-24/20].

⁵¹⁴ Commemoration hearing 23 May 2018 [CH3/22/25].

⁵¹⁵ Commemoration hearing 23 May 2018 [CH3/22/25].

⁵¹⁶ Commemoration hearing 23 May 2018 [CH3/22/25].

⁵¹⁷ Commemoration hearing 23 May 2018 [CH3/22/25].

⁵¹⁸ Commemoration hearing 23 May 2018 [CH3/22/25].

Part V

Recommendations

1 Introduction

- 33.1 Phase 1 of the Inquiry has been concerned with investigating the cause of the fire, its subsequent development and the steps taken by the LFB and the other emergency services in response to it. In the course of it I have touched on the training given to the firefighters and CROs in relation to responding to fires in high-rise buildings and other incidents of a kind that may generate a significant number of calls from people seeking advice and assistance. Phase 2 will involve a more detailed examination of certain aspects of the management of the LFB (in particular its understanding of modern methods of construction and of the way in which some of the materials currently in use behave when exposed to fire) and the steps that were taken to train its officers to respond to fires in high-rise buildings. However, the evidence put before me in Phase 1 is already sufficient to demonstrate that a number of improvements can be made both in the way in which high-rise residential buildings are designed, constructed, approved and managed and in the way in which fire and rescue services respond to fires in such buildings.
- 33.2 The core participants and the experts who gave evidence in Phase 1 have suggested many steps which in their view can and should be taken to improve the safety of those who live in high-rise buildings and should therefore form the subject of immediate recommendations. However, they exhibited a wide divergence of views. It is important that any recommendations I make at this, or indeed any other, stage should be based firmly on the facts that have emerged from the evidence obtained by the Inquiry in the course of its investigations. I also think it important that they command the support of those who have experience of the matters to which they relate. Recommendations that are not grounded in the facts are of no value and recommendations that do not command the support of those who are experts in the field are likely to be ignored and, if not ignored, risk giving rise to adverse unintended consequences.
- 33.3 The recommendations set out below are therefore based entirely on the evidence I have heard in relation to the particular issues that were investigated in Phase 1 and on the findings and conclusions I have been able to reach in this report. They do not attempt to anticipate the evidence to be called in Phase 2 or the conclusions that may be drawn from it, and when deciding what recommendations should be made at this stage I have had regard in particular to their capacity for making a significant contribution to the safety of those who live in high-rise buildings. I am grateful to those of the core participants who made submissions on this subject, all of which I have considered carefully before making my recommendations. I refer to some of them in more detail in later paragraphs.
- 33.4 In England and Wales, high-rise buildings have conventionally been defined for the purposes of fire safety as buildings over 18 metres in height. In Scotland, however, the regulations have recently been changed so that the requirements relating to high-rise buildings apply to buildings over 11 metres in height. It is for consideration whether the position in England should now also be changed and, if so, what height should be adopted for that purpose. However, that question was not the subject of examination in Phase 1 and it is therefore not possible for me to make a recommendation about it at this stage. It is, however, a matter which will be examined in Phase 2.

- 33.5 When considering steps that might be taken to improve safety in relation to high-rise buildings generally it is important not to lose sight of certain matters. The first is that, although not unprecedented, fires of the kind that occurred at Grenfell Tower are rare. The widespread use of combustible rainscreen cladding panels and insulation on the exterior of buildings and the introduction of new kinds of building materials in external walls may have increased the risk of similar fires, but improvements in the regulations relating to fire safety and the requirements for testing and certification of materials, which will be a particular focus of attention in Phase 2, should be capable of mitigating that risk in the future. Effective compartmentation is likely to remain at the heart of fire safety strategy and will probably continue to provide a safe basis for responding to the vast majority of fires in high-rise buildings. However, in the case of some high-rise buildings it will be necessary for building owners and fire and rescue services to provide a greater range of responses, including full or partial evacuation. Appropriate steps must therefore be taken to enable alternative evacuation strategies to be implemented effectively.

2 Use of combustible materials

- 33.6 It is clear that the use of combustible materials in the external wall of Grenfell Tower, principally in the form of the ACM rainscreen cladding, but also in the form of combustible insulation, was the reason why the fire spread so quickly to the whole of the building. Surveys undertaken since the fire have established that external wall materials similar to those used on Grenfell Tower have been used on over 400 other high-rise residential buildings around the country. From the evidence put before me in Phase 1, two very important matters have come to light: first, that in its origin the fire at Grenfell Tower was no more than a typical kitchen fire; second, that the fire was able to spread into the cladding as a result of the proximity of combustible materials to the kitchen windows. It is not possible to say whether the same or a similar combination of design and materials is to be found on any other buildings, but it would be sensible for those responsible for high-rise buildings with similar cladding systems, if they have not already done so, to check whether the same or a similar combination exists. However, even if they do not, fires can occur in a wide variety of circumstances and in cases where the exterior walls of the building include combustible materials of a similar kind, might gain access to it by a variety of different routes. It is not surprising, therefore, that people living in such buildings are concerned for their safety. It is unnecessary for me to recommend that panels with polyethylene cores on the exterior of high-rise buildings be removed as soon as possible and replaced with materials of limited combustibility because it is accepted that that must be done. It is essential that it be done as quickly as possible and concern has been voiced publicly, most recently by the House of Commons Communities and Local Government Select Committee, about the apparently slow rate of progress in carrying out the work.¹ In the light of what has been learnt in Phase 1 about the behaviour of ACM panels with polyethylene cores when exposed to fire, I wish to add my voice to that of the committee in expressing the view that the programme of remedial work should be pursued as vigorously as possible. In view of the part played by the architectural crown in the spread of the fire at Grenfell Tower, particular attention must be paid to decorative features composed of combustible materials.
- 33.7 It has been suggested by certain core participants that I should recommend that no materials be permitted for use in the external walls of high-rise buildings that are not of Euro class A1 (the highest classification of reaction to fire in accordance with BS EN 13501-1). That is a matter on which views differ, however, and following a consultation the government has already prohibited the use on certain types of new buildings of materials whose classification

¹ <https://publications.parliament.uk/pa/cm201719/cmselect/cmcomloc/2546/254602.htm>

of reaction to fire is lower than A2s1, d0. Having regard to the outcome of that consultation, and in the absence of any examination of the competing views, I do not think it appropriate at this stage for me to recommend any change to the regulations in this respect. Nor, for similar reasons, do I think it appropriate for me to recommend an immediate moratorium on the use of materials of Euro class A2 pending the outcome of Phase 2 of the Inquiry, despite the submissions pressed upon me by some of the core participants.

3 Testing and certification of materials

33.8 The regulation of the use of materials and products by reference to their fire classification depends to a large extent on the efficacy of the testing requirements and how they are interpreted by professionals. Early in Phase 2, the Inquiry will investigate the methods of testing and certifying materials for use in high-rise buildings. It will also investigate whether a prescriptive regime is the most effective way in which to ensure the safety of those who live and work in high-rise buildings and whether the current guidance on how to comply with the Building Regulations is sufficiently clear and reliable. None of those questions have been examined in Phase 1 and at this stage, therefore, I am not in a position to make any recommendations about any of those matters.

4 Fire and rescue services: knowledge and understanding of materials used in high-rise buildings

33.9 Although some senior officers within the LFB were aware of the dangers of cladding fires in high-rise buildings, the majority, particularly at the more junior levels, were unaware of them and were not trained to recognise the nature of the fire that occurred at Grenfell Tower. Moreover, the LFB was unaware of the combustible nature of the materials used in the cladding of Grenfell Tower and was therefore not in a position to formulate a contingency plan for a fire of this kind.

33.10 A sound understanding of the materials used in the construction of any high-rise building is essential if the fire and rescue service is to be properly prepared to carry out its function in relation to that building. The risk of fire of the kind that occurred at Grenfell Tower may be low, but knowledge is the key to proper planning and effective training. **I therefore recommend:**

- a. that the owner and manager of every high-rise residential building be required by law to provide their local fire and rescue service with information about the design of its external walls together with details of the materials of which they are constructed and to inform the fire and rescue service of any material changes made to them;
- b. that all fire and rescue services ensure that their personnel at all levels understand the risk of fire taking hold in the external walls of high-rise buildings and know how to recognise it when it occurs.

5 Section 7(2)(d) of the Fire and Rescue Services Act 2004

33.11 Section 7(2)(d) imposes a general duty on fire and rescue authorities to make arrangements for obtaining information needed for the purposes of extinguishing fires and protecting life and property. The LFB appears to have thought that it required nothing more than sending crews to inspect individual buildings in accordance with Appendix 1 to PN633. However,

this essential duty is not circumscribed in that way. Moreover, crews who visited Grenfell Tower during its refurbishment were not trained to carry out the inspections properly: see Chapter 27, paragraphs 24-27. **I therefore recommend:**

- a. that the LFB review, and revise as appropriate, Appendix 1 to PN633 to ensure that it fully reflects the principles in GRA 3.2;
- b. that the LFB ensure that all officers of the rank of Crew Manager and above are trained in carrying out the requirements of PN633 relating to the inspection of high-rise buildings.

6 Plans

33.12 No plans of the internal layout of the building were available to the LFB until the later stages of the fire. However, because each floor of the building above floor 3 was laid out in the same way, the LFB was not unduly hampered in its attempt to fight the fire and rescue occupants by the absence of those plans. In another case, however, the lack of floor plans might easily have far more serious consequences. It should be a simple matter for the owners or managers of high-rise buildings to provide their local fire and rescue services with current versions of such plans. **I therefore recommend** that the owner and manager of every high-rise residential building be required by law:

- a. to provide their local fire and rescue services with up-to-date plans in both paper and electronic form of every floor of the building identifying the location of key fire safety systems;
- b. to ensure that the building contains a premises information box, the contents of which must include a copy of the up-to-date floor plans and information about the nature of any lift intended for use by the fire and rescue services.

I also recommend, insofar as it is not already the case, that all fire and rescue services be equipped to receive and store electronic plans and to make them available to incident commanders and control room managers.

7 Lifts

33.13 When the firefighters attended the fire at Grenfell Tower they were unable to operate the mechanism that should have allowed them to take control of the lifts. Why that was so is not yet known, but it meant that they were unable to make use of the lifts in carrying out firefighting and search and rescue operations. It also meant that the occupants of the tower were able to make use of the lifts in trying to escape, in some cases with fatal consequences. The ability of fire and rescue services to take control of firefighting or fire lifts in a high-rise building is often key to successful operations. **I therefore recommend:**

- a. that the owner and manager of every high-rise residential building be required by law to carry out regular inspections of any lifts that are designed to be used by firefighters in an emergency and to report the results of such inspections to their local fire and rescue service at monthly intervals;
- b. that the owner and manager of every high-rise residential building be required by law to carry out regular tests of the mechanism which allows firefighters to take control of the lifts and to inform their local fire and rescue service at monthly intervals that they have done so.

8 Communication between the control room and the incident commander

- 33.14 The evidence shows that although both national policy and the LFB's policies call for a free flow of information between the control room and the incident commander, in practice that does not occur, at least when one or the other (or both) are operating under significant pressure. **I therefore recommend:**
- that the LFB review its policies on communications between the control room and the incident commander;
 - that all officers who may be expected to act as incident commanders (i.e. all those above the rank of Crew Manager) receive training directed to the specific requirements of communication with the control room;
 - that all CROs of Assistant Operations Manager rank and above receive training directed to the specific requirements of communication with the incident commander;
 - that a dedicated communication link be provided between the senior officer in the control room and the incident commander.

9 Emergency calls

- 33.15 Even allowing for the fact that the control room was operating under great pressure, it is clear that in many cases CROs failed to handle FSG calls in an appropriate or effective way. **I therefore recommend:**
- that the LFB's policies be amended to draw a clearer distinction between callers seeking advice and callers who believe they are trapped and need rescuing;
 - that the LFB provide regular and more effective refresher training to CROs at all levels, including supervisors;
 - that all fire and rescue services develop policies for handling a large number of FSG calls simultaneously;
 - that electronic systems be developed to record FSG information in the control room and display it simultaneously at the bridgehead and in any command units;
 - that policies be developed for managing a transition from "stay put" to "get out";
 - that control room staff receive training directed specifically to handling such a change of advice and conveying it effectively to callers.
- 33.16 The handling of emergency calls by other fire and rescue services was hampered by their lack of information about the nature of the incident and the way in which it had developed. Those who respond to emergency calls on behalf of the LFB need to have as much information as possible about the incident in order to be able to give appropriate advice. **I therefore recommend** that steps be taken to investigate methods by which assisting control rooms can obtain access to the information available to the host control room.

- 33.17 On occasions, MetCC operators and LAS CROs handled calls from people in the tower seeking FSG advice. Sometimes they gave advice that was not consistent with the advice that the LFB was giving or should have been giving in accordance with its policies. **I therefore recommend** that the LAS and the MPS review their protocols and policies to ensure that their operators can identify FSG calls (as defined by the LFB) and pass them to the LFB as soon as possible.

10 Command and control

- 33.18 The evidence of the way in which firefighters were deployed indicates that those in command exercised insufficient control over their actions to ensure that resources were used efficiently. Too often firefighters or junior officers acted on their own initiative, resulting in confusion and duplication of effort. In many cases instructions to crews deployed into the building were not carried out because firefighters came across people needing help and departed from their instructions in order to carry out what they regarded as a more important task. **I therefore recommend:**
- that the LFB develop policies and training to ensure better control of deployments and the use of resources;
 - that the LFB develop policies and training to ensure that better information is obtained from crews returning from deployments and that the information is recorded in a form that enables it to be made available immediately to the incident commander (and thereafter to the command units and the control room).
- 33.19 LFB policies recognise that regular communication between the control room and the incident commander and between the incident commander and the bridgehead are essential to successful firefighting and rescue operations, particularly when dealing with large-scale incidents. However, at Grenfell Tower there was no regular communication between the control room and the incident commander or between the incident commander and the bridgehead. **I therefore recommend** that the LFB develop a communication system to enable direct communication between the control room and the incident commander and improve the means of communication between the incident commander and the bridgehead.
- 33.20 The methods used for transmitting from the control room to the bridgehead information about people needing rescue were disorganised and the line of communication was too extended. The arrangements for receiving and recording that information at the bridgehead were prone to failure and there was little, if any, means of capturing and transmitting to the control room information about the results of deployments to specific flats. **I therefore recommend** that the LFB investigate the use of modern communication techniques to provide a direct line of communication between the control room and the bridgehead, allowing information to be transmitted directly between the control room and the bridgehead and providing an integrated system of recording FSG information and the results of deployments.

11 Equipment

- 33.21 Some of the equipment in use by the LFB, in particular the radio equipment, was unreliable or in some cases failed to work at all. **I therefore recommend:**
- that the LFB urgently take steps to obtain equipment that enables firefighters wearing helmets and breathing apparatus to communicate with the bridgehead effectively, including when operating in high-rise buildings;

- b. that urgent steps be taken to ensure that the command support system is fully operative on all command units and that crews are trained in its use.

12 Evacuation

33.22 There were no plans in place for evacuating Grenfell Tower should the need arise. **I therefore recommend:**

- a. that the government develop national guidelines for carrying out partial or total evacuations of high-rise residential buildings, such guidelines to include the means of protecting fire exit routes and procedures for evacuating persons who are unable to use the stairs in an emergency, or who may require assistance (such as disabled people, older people and young children);
- b. that fire and rescue services develop policies for partial and total evacuation of high-rise residential buildings and training to support them;
- c. that the owner and manager of every high-rise residential building be required by law to draw up and keep under regular review evacuation plans, copies of which are to be provided in electronic and paper form to their local fire and rescue service and placed in an information box on the premises;
- d. that all high-rise residential buildings (both those already in existence and those built in the future) be equipped with facilities for use by the fire and rescue services enabling them to send an evacuation signal to the whole or a selected part of the building by means of sounders or similar devices;
- e. that the owner and manager of every high-rise residential building be required by law to prepare personal emergency evacuation plans (PEEPs) for all residents whose ability to self-evacuate may be compromised (such as persons with reduced mobility or cognition);
- f. that the owner and manager of every high-rise residential building be required by law to include up-to-date information about persons with reduced mobility and their associated PEEPs in the premises information box;
- g. that all fire and rescue services be equipped with smoke hoods to assist in the evacuation of occupants through smoke-filled exit routes.

13 Personal fire protection

33.23 It has been suggested by some core participants that every flat and every public space in a high-rise residential building should be equipped with a fire extinguisher and that a fire blanket should be present in every kitchen. It has also been suggested that hose reels and fire buckets containing water or sand should be kept in the public parts of all such buildings.

33.24 On the face of it there is much to be said in favour of householders obtaining fire blankets and fire extinguishers for their own use and if they live in high-rise buildings a strong argument can be made that such equipment, if appropriately used, may provide protection not only to the occupants of the flat in which a fire occurs but to the occupants of the building as a whole. However, the view of many is that people should not be encouraged to fight fires themselves but should leave the building as quickly as possible and call the fire and rescue service. None of the experts supported the provision of fire extinguishers, hose reels or fire

buckets, which, in my view, provide obvious potential for misuse. The government publishes advice on fire safety in the home and neither the evidence nor the scope of the investigations in Phase 1 provides a basis for the suggested recommendation.

14 Sprinkler systems

- 33.25 The coroner who conducted the inquests arising out of the Lakanal House fire heard evidence about the installation of sprinklers and recommended that the government encourage housing providers responsible for high-rise buildings containing multiple domestic premises to consider fitting them. It is not surprising, therefore, that some core participants have urged me to go a step further and to recommend that such systems be installed in all existing high-rise residential buildings.
- 33.26 Sprinkler systems no doubt have a very valuable part to play in the overall scheme of fire safety measures, but whether such a system would be likely to have suppressed the fire in Flat 16 or prevented it from escaping into the cladding before the firefighters could extinguish it is not something that was investigated in Phase 1. I have therefore heard no evidence about the use of sprinklers generally, their effectiveness under different conditions, or about the cost and disruption that would be caused by installing them in existing buildings. In those circumstances I cannot make any recommendation at this stage about the installation of sprinklers in existing buildings, although the government's response to previous recommendations will form an important part of the investigation to be carried out at Phase 2.

15 Internal signage

- 33.27 The landings in the staircase at Grenfell Tower were not clearly marked with the relevant floor number and where floor numbers were marked they did not reflect the additional floors created during the refurbishment. As a result, firefighters were unable to identify floors clearly when carrying out firefighting or search and rescue operations within the building. **I therefore recommend** that in all high-rise buildings floor numbers be clearly marked on each landing within the stairways and in a prominent place in all lobbies in such a way as to be visible both in normal conditions and in low lighting or smoky conditions.
- 33.28 The evidence put before me in Phase 1 indicates that many occupants of Grenfell Tower were unable to read or understand the fire safety instructions placed in the lobbies throughout the building. Such information is important because it helps to save lives. In the case of Grenfell Tower, fire safety advice was prominently displayed in the lobbies, but it was written only in English, despite the fact that many of the occupants were unable to read English easily or at all. These considerations apply to residential buildings of all kinds containing separate dwellings. **I therefore recommend** that the owner and manager of every residential building containing separate dwellings (whether or not it is a high-rise building) be required by law to provide fire safety instructions (including instructions for evacuation) in a form that the occupants of the building can reasonably be expected to understand, taking into account the nature of the building and their knowledge of the occupants.

16 Fire doors

- 33.29 In Phase 2, the Inquiry will investigate the extent to which at the time of the fire the entrance doors to the flats in Grenfell Tower complied with the relevant legislative requirements and, to the extent that they did not, will investigate the reasons for that failure. However, it has already become apparent from the evidence obtained in Phase 1 that ineffective fire doors allowed smoke and toxic gases to spread through the building more quickly than should have

been possible. One important reason why fire doors failed to perform their essential function was the absence of effective self-closing devices, some of which were broken or had been disabled or removed. Fire doors play an essential role in preventing or inhibiting the spread of smoke and toxic gases and in preserving effective compartmentation of buildings. In many cases they are critical to saving life. **I therefore recommend:**

- a. that the owner and manager of every residential building containing separate dwellings (whether or not they are high-rise buildings) carry out an urgent inspection of all fire doors to ensure that they comply with applicable legislative standards;
- b. that the owner and manager of every residential building containing separate dwellings (whether or not they are high-rise buildings) be required by law to carry out checks at not less than three-monthly intervals to ensure that all fire doors are fitted with effective self-closing devices in working order.

33.30 Effective fire doors are particularly important in those high-rise buildings that are exposed to an increased risk of fire because the external walls currently incorporate unsafe cladding. Among the experts, views differ about the desirability of requiring existing fire doors to be brought up to modern standards and if necessary be replaced with doors that comply with the requirements currently in force in relation to new buildings. However, the importance of fire doors in maintaining compartmentation and protecting parts of the building other than that in which a fire has occurred is plain and in my view justifies the expense that would inevitably be incurred. **I therefore recommend** that all those who have responsibility in whatever capacity for the condition of the entrance doors to individual flats in high-rise residential buildings, whose external walls incorporate unsafe cladding, be required by law to ensure that such doors comply with current standards.

17 Co-operation between emergency services

33.31 A point of concern that has emerged from the evidence heard in Phase 1 is that the emergency services failed to co-ordinate with each other and share information as intended, particularly during the early phases of the incident. Most seriously, each declared a Major Incident without immediately informing the others that it had done so. These failures represent weaknesses in the arrangements under which Category 1 Responders are to work together in response to a serious incident. **I therefore recommend** that the Joint Doctrine be amended to make it clear:

- a. that each emergency service must communicate the declaration of a Major Incident to all other Category 1 Responders as soon as possible;
- b. that on the declaration of a Major Incident clear lines of communication must be established as soon as possible between the control rooms of the individual emergency services;
- c. that a single point of contact should be designated within each control room to facilitate such communication;
- d. that a “METHANE” message should be sent as soon as possible by the emergency service declaring a Major Incident.

- 33.32 The MPS and the LAS have access to each other's CAD logs but neither was accessible to the LFB. Co-operation between the emergency services would be improved if the LFB had access to the CAD logs of the MPS and LAS. **I therefore recommend** that steps be taken to investigate the compatibility of the LFB systems with those of the MPS and the LAS with a view to enabling all three emergency services' systems to read each other's messages.
- 33.33 Although an NPAS helicopter was deployed to observe the development of the fire, the pictures it transmitted could not be viewed by the LFB because the encryption was incompatible with its receiving equipment. Incident commanders and CROs responding to emergency calls might have been assisted by seeing those pictures and in any event they should be available to fire and rescue services as a matter of routine. **I therefore recommend** that steps be taken to ensure that the airborne datalink system on every NPAS helicopter observing an incident which involves one of the other emergency services defaults to the National Emergency Service user encryption.
- 33.34 Many people had difficulty in establishing the whereabouts of friends and relatives who had been taken to hospital after escaping from the building. It is important that in the aftermath of a disaster people are able to ascertain as quickly as possible where their loved ones are and are able to make contact with them. **I therefore recommend** that the LFB, the MPS, the LAS and the London local authorities all investigate ways of improving the collection of information about survivors and making it available more rapidly to those wishing to make contact with them.

18 Other matters

- 33.35 Some of the core participants suggested that I should make recommendations on a range of other matters, including amendments to the Regulatory Reform (Fire Safety) Order 2005 to ensure that it applies to the external walls of residential buildings and the testing and certification of building materials. Although they are all matters of potential importance, none of them were examined in the course of Phase 1 and cannot therefore be the subject of recommendations in this report.

Part VI

Looking ahead to Phase 2

Chapter 34

Looking Ahead to Phase 2

1 Introduction

- 34.1 Having completed Phase 1 of the Inquiry it is useful to look ahead briefly to Phase 2 to identify some areas that will be of particular interest and importance and some that will not now call for investigation to the degree previously thought likely. Most of the questions on which attention will be focused closely relate to the building itself, but it is appropriate to begin with a reminder that important work remains to be done in order to complete the Inquiry's findings about the circumstances in which the deceased lost their lives.

2 The deceased

- 34.2 At the beginning of the Inquiry I expressed the hope that I would be able in due course to make sufficient findings about those who died and the circumstances in which they met their deaths to make it unnecessary for the coroner to resume the investigations which she opened in 2017. I had hoped to be able to make findings in this report in relation to all those matters, save for the wider circumstances that would in any event be the subject of investigation in Phase 2. However, although it has been possible for me to find many of the relevant facts, it has become clear that some aspects of the circumstances in which the deceased met their deaths require a more detailed examination of the evidence than has yet been possible. Within Phase 2 there will therefore be an examination of the evidence relating to the circumstances in which the deceased met their deaths generally with a view to making the findings which the coroner requires.

3 The remaining scope of Phase 2

- 34.3 I decided to begin the Inquiry with an investigation of the events which occurred during the night of the fire because only a detailed understanding of what had happened would enable me to identify effectively those aspects of the design, construction and management of the building that were primarily responsible for the disaster. As a result of the investigations carried out in Phase 1 it has become clear that some aspects of the building played a more significant role than others in bringing about the events which occurred on 14 June 2017.
- 34.4 Since the primary cause of the rapid spread of fire up, around and down the building was the use of ACM rainscreen panels with a polyethylene core, to which the use of combustible insulation contributed, the principal focus of Phase 2 will be on the decisions which led to the installation of a highly combustible cladding system on a high-rise residential building and the wider background against which they were taken. However, a number of other matters have emerged from the evidence gathered in Phase 1 which, although not yet fully explored (and therefore not capable of being the subject of findings at this stage), also give rise to significant concern and call for more detailed investigation. I identify below some of those that I consider particularly important, but must emphasise that it is not an exhaustive list.

4 Matters of particular concern

The London Fire Brigade

- 34.5 In the preceding chapters of this report I have referred to a number of respects in which the performance of the LFB fell below the standards set by its own policies or national guidance. In the case of the control room, there were signal failures to comply with policies that had been recently introduced or modified in response to criticisms of its performance in connection with the Lakanal House fire, giving rise to justified concern that the LFB as an institution had failed to learn or put into practice the lessons of that event. The need for regular active communication between the control room and the incident ground to exchange information about the development of the fire, although required by policies PN633 and PN790, appears to have been routinely ignored. There appears to have been a failure properly to understand the risk of cladding fires in high-rise buildings, despite the fact that by 2017 many buildings of a similar kind in other countries had suffered fires in cladding, some of which had been well publicised. Although some senior officers in the LFB had become aware of the risk, as appears from the *Tall Building Facades* presentation, there had been no attempt to disseminate the information to potential incident commanders and no attempt to equip them with the knowledge or skills needed to recognise and respond to such fires. Questions have also been raised about the LFB's understanding of the nature of the obligation imposed by section 7(2)(d) of the 2004 Act and its approach to discharging it. In that context, as in many others, there appears to have been a significant divergence between policy and practice.
- 34.6 These and other shortcomings described earlier in this report raise far-reaching questions about the LFB as an organisation. Some may question whether its training is adequate in the light of experience; others may question whether it is capable of learning from its mistakes. No conclusion can be reached on questions of that kind at this stage because there has been no examination of the way in which the LFB is managed and no opportunity to question those who are responsible at the highest level for its operations about these apparent shortcomings. However, they are matters of the greatest importance to all who live and work in the capital and will be an important aspect of Phase 2 of the investigation.

Testing and certification of materials

- 34.7 In the light of the expert evidence, in particular Dr Barbara Lane's supplemental report, there are already grounds for thinking that the current regime for testing the combustibility of materials and cladding systems, particularly those chosen for use in high-rise buildings, may be neither as rigorous nor as effectively enforced as it should be. Doubts have also arisen about the reliability of the certification of certain materials for use in high-rise buildings. Grave concern inevitably arises simply from the fact that it was possible for highly combustible materials to be used for the purposes of refurbishing and cladding a building like Grenfell Tower. How that was possible is a question that may be relevant to many aspects of the construction industry, including manufacturers of products currently widely available on the market. Pending further investigation it would clearly be sensible for anyone who is responsible for the fire safety of an existing building or who is considering the use of products on high-rise buildings to scrutinise the information about them provided by the manufacturers and exercise considerable care to ensure that they meet the required standards. These concerns extend to the adequacy of the regulations themselves, the quality of the official statutory and non-statutory guidance currently available, the effectiveness of the tests currently in use, the

arrangements for certifying the compliance of materials with combustibility criteria and the manner in which materials are marketed. They are questions that will lie at the heart of the Inquiry's investigations in Phase 2.

Design and choice of materials

- 34.8 A number of aspects of the design of the refurbishment and the choice of materials will need to be examined. The choice of ACM panels with a polyethylene core, the choice of combustible insulation and XPS window infill panels, a design which incorporated many vertical channels and the decision to incorporate an architectural crown composed of ACM fins, all of which made a major contribution to the extent of the fire, are just examples. An examination of the relevant building regulations and the guidance to the construction industry published by the government in support of them will form an important part of this aspect of the Inquiry's work.

Fire doors

- 34.9 In her supplemental report Dr Lane drew attention to serious questions that arise in relation to the fire doors throughout the tower, both the entrance doors to individual flats opening into the lobbies and the doors opening from the lobbies into the stairs. In Phase 2 it will be necessary to investigate whether those doors complied with the regulations and guidance applicable at the time they were installed, whether they were able to provide appropriate protection against the spread of fire and smoke and if not, why that was so. There is evidence that in many cases self-closing devices were broken or had been disconnected, rendering the doors useless if left open in an emergency. It will be necessary to investigate how that situation came about and why it was allowed to continue.

Window arrangements

- 34.10 As part of the refurbishment the windows were moved outwards so that they no longer sat flush with the original concrete wall but flush with the new cladding system. That alteration, together with the materials used in creating the window surrounds, created certain weaknesses to which Dr Lane and Professor José Torero drew attention. In particular, the use of uPVC in close proximity to combustible insulation and other materials of a combustible nature made it possible for the fire to escape into the cladding from its original location in the kitchen of Flat 16. The design of the window arrangements will therefore be another important focus of investigation in Phase 2.

Lifts

- 34.11 The lifts in Grenfell Tower appear to have been designed as "fire lifts" and lacked some of the protective features such as a secondary power supply, water ingress protection, or FD60 performance for the lift landing doors which would be present in "firefighting lifts".¹ They did, however, include a "fireman's switch", which should have enabled the firefighters to take control of them and prevent further use by the occupants of the building. In the event, the firefighters were unable to take control of the lifts, but they were able to use them in their normal mode of operation to take crew and equipment up to the bridgehead on floor 2.² It does not appear, therefore, that their inability to take control of the lifts significantly affected their operations, but the lifts remained available for use by occupants, as described earlier, in

¹ Dr Lane explained the difference between a "firefighter lift" and a "fire lift" at p. 116 in her presentation on 18 June 2018. Refer also to [BLAS0000033] p. 7, 10 Figs. L1 and L2.

² Dr Lane supplemental report [BLAS0000019] p. 25 19.5.71.

some cases with fatal consequences. Given the importance of such equipment to safety in a high-rise building, it is necessary in Phase 2 to investigate whether the lifts were appropriately maintained and, in particular, why the fireman's switch apparently did not work properly on this occasion.

Smoke extraction system

- 34.12 Suggestions have been made that the smoke extraction system failed to operate in accordance with its design and even contributed to the spread of smoke between different floors of the building. Systems of this kind are an integral part of the fire safety measures in most, if not all, high-rise buildings. Although the system at the tower was designed to operate on only one floor and was not intended to deal with smoke extraction on multiple floors at the same time, it is important to understand whether, in this case, it was capable of operating in accordance with its design and whether it did so. These questions will therefore form part of the investigation in Phase 2.

The warnings of the local community and the authorities' response to the disaster

- 34.13 From the outset members of the local community have said that they warned the TMO on many occasions about fire hazards, both those arising from the refurbishment and more generally. There is a strong feeling among them that their voices were ignored and that if attention had been paid to them the disaster could have been avoided. There is also a strong view in many quarters that in their response to the disaster the authorities failed the community by not providing adequate support in the days immediately following the fire. These are both important matters for further investigation in Phase 2, not least because they reflect what is said to be a general lack of concern on the part of the authorities for the residents of the tower and the wider community.

5 Matters no longer requiring investigation

Stairs

- 34.14 A question was raised about the width of the stairs, given that they provided the sole means of access to the upper floors of the tower for firefighters as well as the sole means of escape for the occupants. However, the stairs appear to have complied with requirements of the legislation in force at the time of their construction and the expert evidence supports the conclusion that they had sufficient capacity to enable all the occupants of the building to escape within a reasonable time. This aspect of the building will not, therefore, be the subject of further investigation in Phase 2.

Gas

- 34.15 It was thought at one time that the supply of gas to the tower might have played a significant part in the outbreak and development of the fire, but as a result of the investigation carried out in Phase 1 it has become clear that that was not the case. Although the supply of gas allowed fires within individual flats to continue to burn until it was shut off at 23.40 that day, its contribution to the fire which consumed the tower appears to have been minimal. However, some works associated with the installation of the new gas riser were incomplete and may have contributed to the spread of smoke. In those circumstances it will be necessary at Phase 2 to consider whether the installation of the gas services complied with the relevant regulatory regime, but the focus of those investigations can be relatively narrow.

Electricity

- 34.16 There was a widespread suspicion, based on events that were said to have occurred in 2013, that the fire had been caused by a surge in the supply of electrical power to the building. In the event, no evidence has emerged to support that suspicion and I am confident that the true cause of the initial outbreak of fire has been correctly identified in Chapter 21. As a result, I do not think it necessary to undertake any further investigation into that aspect of the matter.

Appendices

Appendix 1

Terms of Reference – 15 August 2017

The Inquiry's Terms of Reference are:

1. To examine the circumstances surrounding the fire at Grenfell Tower on 14 June 2017, including:
 - a. the immediate cause or causes of the fire and the means by which it spread to the whole of the building;
 - b. the design and construction of the building and the decisions relating to its modification, refurbishment and management;
 - c. the scope and adequacy of building regulations, fire regulations and other legislation, guidance and industry practice relating to the design, construction, equipping and management of high-rise residential buildings;
 - d. whether such regulations, legislation, guidance and industry practice were complied with in the case of Grenfell Tower and the fire safety measures adopted in relation to it;
 - e. the arrangements made by the local authority or other responsible bodies for receiving and acting upon information either obtained from local residents or available from other sources (including information derived from fires in other buildings) relating to the risk of fire at Grenfell Tower, and the action taken in response to such information;
 - f. the fire prevention and fire safety measures in place at Grenfell Tower on 14 June 2017;
 - g. the response of the London Fire Brigade to the fire; and
 - h. the response of central and local government in the days immediately following the fire.
2. To report its findings to the Prime Minister as soon as possible and to make recommendations.

Appendix 2

List of Witnesses

List of FF witnesses

FF (called) witnesses

	Witness Name	Statement Reference	Contemporaneous Note Reference	Exhibit Reference	Date of Oral Evidence
1	Thomas Abell, FF	MET000080558	MET00005699	MET00013034	02.07.18
			MET00005700		
2	Yvonne Adams, CRO	MET00007762			23.11.18
3	Marc Aston-O'Donovan, FF	MET00008002	MET00005465	MET00013035	31.07.18
				MET00013036	
4	David Badillo, FF	MET00010080	MET00005347	MET00015603	29.06.18
		MET00012654	MET00005348	MET00015637	
5	Christopher Batcheldor, CM	MET00007511	MET00005388		02.08.18
6	Charles Batterbee, CM	MET00012871	MET00005674	MET00015732	28.06.18
			MET00005675	MET00015731	
7	Stuart Beale, WM	MET00007512	MET00005358		02.08.18
		MET00012994			
8	Scott Bell, FF	MET00012995	MET00005686	MET00017022	11.09.18
9	Harry Bettinson, FF	MET00007879	MET00005727	MET00015786	19.07.18
		MET00007943		MET00015787	
				MET00015788	
				MET00015789	
10	Rob Brown, Crew Commander (Surrey FRS)	MET00010868		MET00018263	19.11.18
		MET00010786			
11	Daniel Brown, FF	MET00010867	MET00005251		28 and 29.06.18
			MET00005252		
12	Raoul Codd, CM	MET00012539	MET00005624		10.09.18
13	Shaun Coltress, WM	MET00010911	MET00005656	MET00015903	19.09.18
14	Gareth Cook, SM	MET00012779	MET00005717	MET00015779	24.07.18
		MET00007882			
15	Charles Cornelius, FF	MET00012663	MET00005590	MET00015734	06.09.18

	Witness Name	Statement Reference	Contemporaneous Note Reference	Exhibit Reference	Date of Oral Evidence
16	Dany Cotton, Commissioner	MET00012492	MET00015756	MET00015754	27.09.18
				MET00015755	
				MET00015756	
				MET00015757	
				MET00015758	
				MET00015759	
				MET00015760	
				MET00015761	
17	Sharon Darby, CRO	MET00013961			01 and 02.08.18
18	Nicholas Davis, GM	LFB00004829			02.10.18
19	Louisa De Silvo, WM	MET00010913	MET00005634	MET00015813	25 and 26.07.18
		MET00013233		MET00015814	
				MET00015815	
				MET00015816	
				MET00015817	
				MET00015818	
				MET00015819	
				MET00015820	
				MET00015821	
				MET00015823	
				MET00015824	
20	Oliver Desforges, FF	MET00008013	MET00005706		31.07.18
21	Nigel Dilley, GM (Essex FRS)	LFB00024396		LFB00024419	19.11.18
22	Christopher Dorgu, FF	MET000086037	MET00005314		09.07.18
		MET00015663			
23	Michael Dowden, WM	MET00010915	MET00005453	MET00015597	26, 27 and 28.06.18
			MET00005454	MET00015608	
24	Peter Duddy, CRO	MET00007787			13.09.18
25	Daniel Egan, SM	MET00007515	MET00005263	MET00015598	03 and 04.07.18
				MET00015634	
				MET00015636	
				MET00015639	
				MET00015642	
26	Adrian Fenton, DAC	MET000080569	MET00005290	MET00017094	17.07.18
		MET00019921		MET00017390	
				MET00023231	
				MET00023232	
27	Agnel Fernandes, FF	MET000083292	MET00005645	MET00013053	10.09.18
				MET00015611	
28	Katie Foster, FF	MET00010084	MET00005736	MET00015807	10.09.18
29	Heidi Fox, CRO	MET00007764			23.11.18

	Witness Name	Statement Reference	Contemporaneous Note Reference	Exhibit Reference	Date of Oral Evidence
30	Thomas Furnell, WM	MET00008022	MET00005316	MET00017033	11.09.18
				MET00017035	
				MET00017036	
31	Ben Gallagher, CM	MET00010083	MET00005536		10.09.18
		MET00040215	MET00005537		
32	Martin Gillam, FF	MET00008025	MET00005696		23.07.18
			MET00005697		
33	Thomas Goodall, GM	MET000083296	MET00005435	MET00015923	03.09.18
			MET00015923	MET00015924	
				MET00015925	
				MET00015926	
				MET00015927	
				MET00015928	
				MET00015929	
				MET00015930	
				MET00015931	
				MET00015932	
				MET00015933	
				MET00015934	
				MET00015935	
				MET00015936	
34	Angie Gotts, CRO	MET00007694			17.09.18
35	Patrick Goulbourne, GM	MET00010759		MET00015873	12.09.18
		MET00013111		MET00015874	
				MET00015875	
36	Norman Harrison, WM	MET00007885	MET00005271		19.09.18
		MET00007886	MET00015872		
		MET00023341			
37	Peter Herrera, FF	MET00010876 LFB00032237 (Rule 9)	MET00005520		06.09.18
38	Richard Hippel, FF	MET000083300	MET00005209	MET00013057	19.07.18
				MET00015593	
39	Martin Hoare, CM	MET00008027	MET00005424	MET00015844	10.09.18
				MET00015845	
				MET00015846	
40	Christine Howson, CRO	MET00007763			23.11.18
41	Aisha Jabin, CRO (North West FRS)	MET00008028			17.09.18
42	Adam Johnson, FF	MET00010082	MET00005575	MET00015691	19.09.18

	Witness Name	Statement Reference	Contemporaneous Note Reference	Exhibit Reference	Date of Oral Evidence
43	Peter Johnson, WM	MET00013235	MET00005344	MET00016970	04 and 05.09.18
				MET00016971	
				MET00016972	
				MET00016974	
				MET00016975	
				MET00016997	
				MET00016998	
				MET00016999	
				MET00017000	
				MET00017001	
				MET00017002	
				MET00017004	
				MET00017005	
				MET00017006	
				MET00017007	
				MET00017008	
				MET00017598	
44	Elliot Juggins, FF	MET00010879	MET00005735	MET00015772	11.09.18
45	Raymond Keane, FF	MET00007782	MET00005593	MET00013058	18.07.18
46	Jason King, FF	MET00010813	MET00005663	MET00015796	04.09.18
				MET00015797	
				MET00015798	
				MET00015800	
				MET00015801	
				MET00015802	
47	Daniel Kipling, SM	MET00012557	MET00005635	MET00015750	04.09.18
			MET00015749		
48	Sharon Lancaster, CRO (Essex FRS)	MET00018755			19.11.18
49	Gregory Lawson, FF	MET00010815	MET00005326	MET00016881	10.09.18
				MET00016882	
				MET00016883	
50	Matthew Leaver, WM	MET00007781 MET00007857 MET00012838 MET00012839	MET00005757	270 exhibited photos which have been disclosed but not formally read into the record - do we want to read in now? Leaver was not referred to any of these in oral evidence	11.09.18

	Witness Name	Statement Reference	Contemporaneous Note Reference	Exhibit Reference	Date of Oral Evidence
51	Brett Loft, SM	MET00007518	MET00005294	MET00015594	05.09.18
				MET00015595	
				MET00015600	
				MET00015601	
				MET00015602	
				MET00015604	
				MET00015605	
				MET00015607	
				MET00015614	
				MET00015617	
				MET00015619	
				MET00015620	
				MET00015621	
				MET00015627	
				MET00015628	
				MET00015632	
				MET00015633	
				MET00015635	
				MET00015638	
				MET00015640	
				MET00015643	
				MET00015644	
				MET00015645	
				MET00015647	
52	Zoe Martin, CRO (Kent FRS)	MET00012678			19.11.18
53	Benjamin McAlonen, CM	MET00012679	MET00005406	MET00015729	06.09.18
			MET00015729		
54	Nicke Merrion, FF	MET000086060	MET00005470	MET00015865	06.09.18
			MET00005471		
55	Daniel Meyrick, WM	MET00007760	MET00005459		10.07.18
			MET00005460		
56	Gary Moore, FF	MET00007761			04.09.18
57	Alan Moore, WM	MET00010819	MET00005208	MET00013060	04.09.18
				MET00013061	
58	Daniel Morrison, CM	MET000080586	MET00005414	MET00015753	12.09.18

	Witness Name	Statement Reference	Contemporaneous Note Reference	Exhibit Reference	Date of Oral Evidence
59	Michael Mulholland, SM	MET00007865	MET00005218	MET00018713 to MET00018751 inclusive	01.08.18
		MET00018756	MET00005219		
			MET00005220		
			MET00005221		
			MET00005222		
			MET00005223		
			MET00005224		
			MET00005225		
			MET00005226		
60	Desmond Murphy, FF	MET00010820	MET00005350	MET00013062	06.09.18
				MET00013063	
				MET00013064	
61	Nicholas Myatt, SM	MET00007783	MET00005231	MET00013067	03 and 04.09.18
		MET00007860		MET00013069	
				MET00013070	
				MET00015612	
62	Alexandra Norman, OM	MET000080589	MET00005199		13.09.18
63	Justin O’Beirne, FF	MET000083321	MET00005337	MET00013071	02 and 03.07.18
			MET00005338	MET00013074	
				MET00013076	
				MET00013076	
				MET00013077	
				MET00013078	
				MET00013080	
				MET00015596	
				MET00015624	
				MET00015625	
				MET00015629	
64	Stephen O’Donoghue, FF	MET000080591	MET00005339	MET00013081	23.07.18
65	John O’Hanlon, FF	MET000080592	MET00005407	MET00015806	04.07.18
66	Brien O’Keeffe, WM	MET00010762	LFB00001970	LFB00001929	05, 06 and 09.07.18
		MET00013967	MET00005284	LFB00001961	

	Witness Name	Statement Reference	Contemporaneous Note Reference	Exhibit Reference	Date of Oral Evidence
67	Andrew O’Loughlin, DAC	MET00012563	MET00005213	MET00015702	24 and 25.09.18
				MET00015703	
				MET00015705	
				MET00015706	
				MET00015707	
				MET00015708	
				MET00015709	
				MET00015710	
				MET00015711	
				MET00015713	
				MET00015704	
68	David O’Neill, GM	MET00010758	MET00005281	MET00015762	02.10.18
69	Jason Oliff, SM	MET00012791	MET00005247	MET00016906	16.07.18
				MET00016908	
				MET00016909	
				MET00016910	
				MET00016911	
				MET00016912	
70	Theresa Orchard, FF	MET000086069	MET00005610	MET00017360	10.09.18
71	Antony Peckham, WM	MET00007889	MET00005420		26.07.18
72	Debbie Real, CRO	MET00007696		MET00013083	17.09.18
				MET00013082	
73	Dean Ricketts, WM	LFB00004825			02.10.18
74	Dean Roberts, FF	MET00007890	MET00005669		23.07.18
75	Andrew Roe, AC	MET00007520	MET00005405	MET00005404	25 and 26.09.18
		MET00007521			
		MET00007522			
		MET00010065			
76	Sarah Russell, CRO	MET00007698			19.11.18
77	Paul Sadler, WM	MET00012481	MET00005565	MET00015641	25.07.18
		MET00012684		MET00016967	
78	Christopher Secrett, CM	MET00010105	MET00005384	MET00013086	04 and 05.07.18
		MET00039598	MET00039593	MET00015646	
			MET00039594	MET00039593	
				MET00039594	
79	Joanne Smith, SOM	MET00007766			11 and 12.07.18
80	Jamal Stern, CM	MET00012483	MET00005493	MET00016890	19.07.18
		MET00039568		MET00016891	
				MET00016890	
				MET00016893	
				MET00018457	
				MET00018458	

	Witness Name	Statement Reference	Contemporaneous Note Reference	Exhibit Reference	Date of Oral Evidence
81	Nikki Upton, FF	MET00007524	MET00005625	MET00015868	06.09.18
		MET00019974	MET00005626	MET00015869	
82	Andrew Walton, SM	LFB00023365	MET00005712	MET00005713	20.09.18
		MET00010828	MET00005714	MET00015725	
		MET00018460	MET00005715	MET00018455	
			MET00005716	MET00018456	
			MET00015724		
83	Paul Watson, WM	MET00008044	MET00005273	MET00015606	24.07.18
84	Richard Welch, GM	MET00007525	FOA00000002		18.09.18
		MET00013007			
85	Jon Wharnsby, FF	MET000083336	MET00005379		06.09.18
86	Glynn Williams, WM	MET00008045	MET00013095	MET00013093	30 and 31.07.18
				MET00013096	
				MET00015613	
87	Peter Wolfenden, SM	MET00017428		MET00017596	11.09.18
				MET00017597	
88	Michael Wood, FF	MET00010928	MET00005469	MET00015860	12.09.18
				MET00015862	
				MET00015863	

FF (read) witnesses

	Witness Name	Statement/ Contemporaneous Note Reference
1	Dean Abbess, FF	MET00005477
2	Terry Abnett, FF (Surrey FRS)	MET00013108
3	Zade Alassad, FF	MET00012991
4	Jon Aldridge, FF	MET00010864
		MET00005726
		MET00016915
5	Daniel Alie, SM	MET00012772
6	Andrew Alliston, FF	MET00012459
7	Melchizedek Anderson, CM	MET00012652
8	Stephen Apter, Deputy Commissioner	MET00012532
9	Wayne Archer, FF	MET00008001
10	Nathan Ashe, WM	MET0012653
11	Gregory Ashman, GM	MET00007509
		MET00012533
12	Thomas Atkins, CM	MET00010103
13	Ian Barritt, CM	MET000083284
14	Nicholas Barton, FF	MET00007942
		MET00005214
15	John Barwis, WM	MET00007510

	Witness Name	Statement/ Contemporaneous Note Reference
16	Gerard Basson, OM (North West FRS)	MET00008003
17	Jessamine Bate, FF	MET00017072
18	Caili Beckham, Call Operator (Surrey FRS Control Room)	MET00010784
19	Mark Beer, FF	MET00086031
20	Enrico Beltrami, FF	MET00008004
21	Richard Benaicha, FF	MET00012774
22	James Berry, WM	MET00012657
23	Daniel Bills, FF	MET00005490
24	Gemma Bloxham, FF	MET00010866
25	Stephen Boulton, FF	MET000080564
26	William Boulton, FF	MET00013222
27	Brian Bradshaw, Control Room Operator (NWFC)	MET00008005
28	Benjamin Broderick, FF	MET00012658
29	Mark Brodrick, FF	MET00016789
30	Andrew Brooks, FF	MET00005262
31	Gary Brooks, WM	MET000080565
32	Russell Brown, FF	MET00010910
33	Stewart Brown, WM	MET00013965
34	Thomas Bunday, FF	MET00012537
35	Russell Butler, FF	MET00007880
36	Geoffrey Campbell, FF	MET00010788
37	Andy Cane, GM	MET00007881
38	Alexander Cardy, WM	MET00010085
39	David Carroll, WM	MET000083285
40	Paul Charity, CM	MET00010790
41	Robert Chart, FF	MET00005230
42	Chris Cheesman, FF	MET00039905
		MET00005485
43	Stuart Chessun, CM	MET00013236
44	Neil Chisholm, GM	MET00007513
45	Helen Christmas, WM	MET00014999
46	Peter Clark, WM	MET00017071
47	Adam Clarke, CM	MET00015004
		MET00005340
48	Carl Clarke, FF	MET00012462
49	Sam Coaker, OM	MET00007767
50	Steven Collins, WM	MET00010086
51	Luke Cook, FF	MET00012855
52	Matthew Cook, GM	MET00007948
53	Peter Cracknell, FF	MET00010912
54	Paula Craig, Team Leader (North West FRS)	MET00008008
55	Adam Crinion, SOM	MET00008009

	Witness Name	Statement/ Contemporaneous Note Reference
56	Timothy Cutbill, CM	MET00010872
57	James Cuthbert, FF	MET00012878
58	Dan Daly, AC	MET00012857
59	Tristan Daoud, FF	MET00008010
60	David Davies, CM	MET000010793
61	Ian Davis, FF	MET00010794
62	David DeCosta, FF	MET00005452
63	Alex De St Aubin, FF	MET00012464
64	Joe Dean, FF	MET00008012
65	Patrick Delaney, WM	MET00005235
		LFB00024415
66	Michael Denny, CM	MET00013232
67	Aldo Diana, CM	MET00018800
68	Devani Dilleish, FF	MET00007951
69	Anthony-Mawusi Doe, FF	MET00010797
70	Thomas Dotchin, FF	MET00012542
71	Benjamin Dotchin, FF	MET00010072
72	Stephen Dounias, FF	MET00010914
73	Colin Dowdall, FF	MET00013231
74	Lee Drawbridge, DAC	MET00010104
75	Stephen Dudeney, GM	MET00007514
		MET000010873
76	Steven Duncan, FF	MET00010874
77	Robert Dwyer, FF	MET00012781
78	Jonathan Earl, FF	MET00012782
		MET00005478
79	Craig Eden, CM	MET00008019
80	Craig Edwards, FF	MET00013224
81	Scott Elliott, FF	MET00012544
82	Dominic Ellis, AC	MET00007693
83	Grant Evans, CM	MET00012466
84	Richard Evans, CM	MET00010089
85	David Farr, SM	MET00013112
86	Dominic Fearnley, CM	MET00008020
87	Benjamin Felton, FF	MET00012467
88	Nicholas Ferguson, FF	MET00015669
89	Brian Flanagan, FF	MET00007765
90	James Flin, SM	MET00012998
		MET00017084
		MET00017099
		MET00018818
91	Albert Folivi, FF	MET000086041

	Witness Name	Statement/ Contemporaneous Note Reference
92	Piers Foster, FF	MET00086042
93	Keeley Foster, GM	MET00013963
94	Neill Franklin, FF	MET00008021
95	David Friend, FF	MET00012470
96	Jason Frisby, SM	MET00010800
97	Christopher Frost, CM	MET00083294
98	Timothy Frost, GM	MET00010802
99	James Geapin, FF	MET00010099
100	Robbie Gentry, FF	MET00019991
101	David George, SM	MET00007768
102	Paul Godber, WM	MET00012546
103	Luke Goddard, FF	MET00010804
104	Ennio Gonnella, FF	MET00012785
105	Russell Gonzalez, FF	MET00012861
106	John Graham, GM	MET00017432
		MET00005257
		MET00017432
108	Simon Grant, FF	MET00007883
109	Paul Gray, CM	MET00010806
110	Neil Green, FF	MET00083297
111	Matthew Gregory, WM	MET00012877
112	Edward Haines, FF	MET00012547
113	Russell Hall, FF	MET00012548
114	Christian Hall, WM	MET00010808
115	Charles Hanks, SM	LFB00032724
116	Alan Hanlon, FF	MET00012549
117	Nicholas Harding, SM	MET00012550
118	Matthew Harold, FF	MET00010073
119	Daniel Harriman, CM	MET00007867
120	Andrew Harris, FF	MET00007884
121	Duane Harris, FF	MET00010809
122	Paul Harris, FF	MET000083298
123	Stephen Hayward, FF	MET00012552
124	Scott Hayward, POM	MET00007894
125	Matthew Hayward, WM	MET00012551
126	Oliver Henley, FF	MET00010810
127	David Hill, FF	MET000083299
128	Jordan Hill, FF	MET00010919
129	Gary Hiscock, FF	MET00010877
130	Benjamin Holehouse, FF	MET00012672
131	Kylei Holmes-Lewis, FF	MET00015005
132	Martin Hooper, FF	MET00010920

	Witness Name	Statement/ Contemporaneous Note Reference
133	Paul Howard, FF	MET00010087
134	Alan Hudson, FF	MET00012673
135	Tyrone Jackdeo, FF	MET000012999
136	Marcus Johnson, CM	MET00010921
137	Pam Jones, CRO	LFB00032090
138	Ian Jones, FF	MET00017431
		MET00005264
139	John Joseph, FF	MET00005568
140	Nicholas Kalirai, FF	MET00005622
141	Edric Kennedy-MacFoy, CM	MET00010761
		MET00010760
142	Mark Kentfield, WM	MET00005353
		MET00023051
143	Daniel Knapman, FF	MET00010814
144	Richard Knight, FF	MET00083307
145	Christopher Lang, FF	MET00012674
146	Dean Lawrence, FF	MET00012873
147	Steve Leader, GM	MET00016791
148	Terence Lowe, FF	MET00007969
149	Marcus Lundquist, FF	MET00007888
150	Damian Magee, CM	MET00010882
151	Abdul Malik, FF	MET00008032
152	Paul Marks, CM	MET00017068
153	Katrina Marshall, Fire Control Operator (Essex FRS Control Room)	MET00012848
154	Peter May, AOM	MET00007895
		MET00015882
155	Jamie Mayne, CM	MET00008033
156	Andrew McArthur, FF	MET00012680
157	Kyle McClelland, FF	MET00010924
158	Jacqueline McConochie, SM	MET00017430
159	Andrew McKay, WM	MET00010077
160	Richard McShee, CM	MET00012789
161	Paul Meyrick, WM	MET00010818
162	Richard Mills, AC	MET00013119
163	Steven Mills, FF	MET000080584
164	Niki Mitchell, FF	MET00005483
		MET00039859
165	Richard Mitchell, FF	MET000086063
166	Graham Moore, FF	MET00012477
167	Ian Moore, FF	MET00010081
168	James Morcos, FF	MET00005585
169	Amanda Morrison, WM	MET000086066

	Witness Name	Statement/ Contemporaneous Note Reference
170	Sean Murphy, CM	MET000080587
171	Patrick Murray, FF	MET00010925
172	Dean Nelson, FF	MET00010926
173	Anthony Nelson, FF	MET00007785
174	Steven Ngo, FF	MET00010887
175	Mark Niblett, WM	MET00005299
		MET00010888
176	Ricky Nuttall, FF	MET00012561
177	Constantine Nwagwu, FF	MET00012562
178	Denis O'Brien, FF	MET00010889
179	Sean Oakley, FF	MET00010890
180	Rick Ogden, DAC	MET00007657
		MET00010891
181	Earnest Okoh, FF	MET000080593
182	Vanessa Osborne, Fire Control Operator (Essex FRS Control Room)	MET00012849
183	Helen Oulton, Control Room Operator (North West FRS)	MET000080595
184	Steve Page, FF	MET00012870
185	Jonathan Parker, WM	MET00012566
186	Anthony Parkin, WM	MET00012567
187	Christopher Payton, SM	MET00010821
188	Richard Peacock, FF	MET00010079
189	Andrew Percy, CM	MET00010075
190	Daniel Pegram, FF	MET000080597
191	Christopher Perez, FF	MET00017426
192	Jeanette Pike, Control Operator (Merseyside FRS)	MET00013002
193	Sue Pimblett, Team Leader (North West FRS)	MET00008034
194	Lawrence Pitt, FF	MET000080599
195	Michael Pole, FF	MET00005540
		MET00039672
196	Natalie Pomponi, Team Leader (North West FRS)	MET000080600
197	Daniel Poullais, CM	MET00012682
198	James Power, FF	MET00007786
199	Suzanne Pursey, FF	MET00010893
200	Carl Ramsay, CM	MET00012569
201	Kate Ranson, AOM	MET00007864
202	Charlie Rawlings, CM	MET00005588
203	Tom Reddington, FF	MET00005476
204	David Reed, FF	MET00007697
		MET00017346
		MET00017353
		MET00005514
205	Christopher Reynolds, FF	MET00010894

	Witness Name	Statement/ Contemporaneous Note Reference
206	Lewis Rice, FF	MET00008038
207	Terence Roots, FF	MET00012876
208	Harvey Sanders, FF	MET00012482
209	Mitch Samson, CM (Kent FRS Control Room)	MET00012796
210	Jonathan Saunders, FF	MET00012797
211	Neil Saunders, FF	MET000080602
212	Nicholas Saunders, SM	MET00013234
213	Michael Skorzewski, FF	MET00012570
214	Matthew Sephton, FF	MET00010895
		MET00016948
215	Thomas Sharp, CM	MET00010074
216	Graeme Shaw, FF	MET00012798
217	Alan Sime, FF	MET00010896
218	John Simpson, GM	MET00008040
219	Mandeep Singh, FF	MET000083327
		MET00013089
220	Parvinder Singh, FF	MET00005204
221	Michael Smith, FF	MET00017069
222	Steven Somers, FF	MET00015001
223	Methusael Sonson, FF	MET00010824
224	Julian Spooner, GM	MET000086071
		MET00005259
225	Laurence Stavely, FF	MET00005250
226	Martin Stevenson, CM	MET00012860
227	John Stewart, WM	MET000083329
228	Rodney Stuart, FF	MET00005429
229	Bryan Swaddling, WM	MET00019066
		MET00019952
230	Matthew Tanner, FF	MET00010826
231	Michael Terry, Fire Control Officer (Essex FRS)	MET00007758
232	Marc Thorpe, FF	MET00005430
233	Guy Tillotson, CM	MET000080603
234	Adrian Toppin, FF	MET00012854
235	Paul Trew, GM	MET000086073
236	Leslie Tucker, FF	MET000080604
237	Phillip Turcsi, WM	MET00010899
238	Adrian Tyldesley, FF	MET000083333
239	Andrew Vango, FF	MET00012688
240	Richard Vanstone, WM	MET00010827
241	Simon Vincent, CM	MET00016790
242	Steven Vydelingum, WM	MET00012572

	Witness Name	Statement/ Contemporaneous Note Reference
243	Rod Wainwright, SM	MET00014998
		MET00005356
		MET00017078
244	David Watts, WM	MET00012689
245	Tom Welch, FF	MET000080606
246	Antony Welden, FF	MET00012574
247	Stephen West, GM	MET00017073
248	Russ White, Senior Fire Control Operator (Essex FRS Control Room)	MET00012847
249	Nicholas Whiting, FF	MET00013957
250	Leon Whitley, FF	MET00005613
251	Philip Wigley, CM	MET00010927
252	Vincent Williams, FF	MET00010829
253	Andrew Williams, SM	MET00013008
254	Adam Wilson, FF	MET000083337
255	James Wolfenden, FF	MET00010831
256	Joe Worley, FF	MET00007891
257	Michael Worman, FF	MET00012575
258	Andrew Wright, FF	MET00010076
259	Carrie Wright, FF	MET00010096
260	John Wright, FF	MET000083339
261	Richard Wybrow, FF	MET000086079
262	Gregory Yeoman, CM	MET00007862
		MET00005309

List of BSR witnesses

BSR (called) witnesses

	Witness Name	Statement Reference	Exhibit Reference	Date of Oral Evidence
1	Omar Alhaj Ali	(IWS1) IWS00000781	(OM/1) IWS00000780	16.10.2018
		(IWS2) IWS00001052		
2	Rashida Ali	IWS00000003	(RA/1-6) IWS00000003	05.11.2018
3	Maria de Fatima Alves	IWS00000443	(MA/1-2) IWS00000441	03.10.2018
4	Manuel Miguel Ferreira Alves	IWS00000538	(MMFA/1-3) IWS00000536	04.10.2018
5	Sid-Ali Atmani	IWS00000070		05.11.2018
6	Nicholas Trevanion Burton	IWS000000064	(NTB/1) IWS000000063	06.11.2018
			(NTB/2) IWS000000065	
7	Hiwot Dagnachew	IWS00000845		09.10.2018
8	Samuel Daniels	IWS00000608		10.10.2018
9	Alemishet Demissie	IWS00000860		01.11.2018
10	Petra Doulova	IWS00000835	(PD/1) IWS00000832	17.10.2018
			(PD/2) IWS00000833	
11	Natasha Elcock	(IWS1) IWS00000310	(NE/1-5) IWS00000306	08.11.2018
		(IWS2) IWS00001186		
12	Richard Fletcher	IWS00000913		11.10.2018
13	Helen Gebremeskel	(IWS1) IWS00000933	(HG/1) IWS00001140	06.11.2018
		(IWS2) IWS00001141	(HG/2) IWS00001139	
			(HG/3) IWS00001142	
14	Marcio Gomes	(IWS1) IWS00001078	(MG/1) IWS00000623	09.11.2018
		(IWS2) IWS00001184	(MG/2) IWS00000621	
15	Nadia Jafari	IWS00000683	(NJ/1) IWS00000681	08.10.2018
16	Maher Khoudair	IWS00000182		09.10.2018
17	Chia-Yuan (Naomi) Li	(IWS1) IWS00000515	(NL/1) IWS00000520	29.10.2018
		(IWS2) IWS00001152	(NL/2) IWS00000513	
		(IWS3) IWS00001231	(NL/3) IWS00000516	
			(NL/4) IWS00000514	
			(NL/5) IWS00000517	
			(NL/6) IWS00000512	
			(NL/7) IWS00000518	
18	Branislav Lukic	IWS00000770	(BL/1-3) IWS00000770	10.10.2018
19	Sener Macit	(IWS1) IWS00000069		01.11.2018
		(IWS2) IWS00001156		
20	Munira Mahmud	IWS00000776	(MM/1) IWS00000777	08.10.2018
21	Meron Mekonnen	IWS00000912	(MM/1(a)) IWS00000449	09.10.2018
			(MM/1(b)) IWS00000451	
			(MM/1(c)) IWS00000452	
			(MM/1(d)) IWS00000453	

	Witness Name	Statement Reference	Exhibit Reference	Date of Oral Evidence
22	Shekeb (Farhad) Neda	(IWS1) IWS00000886 (IWS2) IWS00001134		18.10.2018
23	Flora (Shakila) Neda	(IWS1) IWS00000887 (IWS2) IWS00001133		18.10.2018
24	Rosemary Olabisi Oyewole	IWS00000852		15.10.2018
25	Hoang Khanh Quang	(English) IWS00000080 (Chinese) IWS00001170	(HKQ/1) IWS00000081	05.11.2018
26	Antonio Roncolato	(IWS1) IWS00000894 (IWS2) IWS00000922 (IWS3) IWS00001109	(AR/1-12) IWS00000892 (AR/13) IWS00000924 (AR/14) IWS00000923	03.10.2018
27	Roy Smith	(IWS1) IWS00000771 (IWS2) IWS00001169	(RS/1) IWS00000931	31.10.2018
28	Elizabeth Sobieszczak	IWS00001105		07.11.2018
29	Oluwaseun Talabi	IWS00000851		16.10.2018
30	Paulos Woldesilassie Tekle	(IWS1) IWS00001051	(PT/1-7) IWS00001051	30.10.2018
31	Mariko Toyoshima-Lewis	(IWS1) IWS00000304 (IWS2) IWS00001092	(MTL/1) IWS00000907 (MTL/2(1)) IWS00000909 (MTL/2(2)) IWS00000911 (MTL/2(3)) IWS00000905 (MTL/2(4)) IWS00000910 (MTL/3(a)) IWS00000906 (MTL/3(b)) IWS00000908	11.10.2018
32	Jose Vieiro	IWS00001122		17.10.2018
33	Hanan Wahabi	(IWS1) IWS00000074 (IWS2) IWS00001146		08.11.2018
34	Hamid Wahbi	IWS00001157		29.10.2018
35	Rabia Yahya	(IWS1) IWS00000498 (IWS2) IWS00001144		30.10.2018

BSR (read) witnesses

	Witness Name	Statement Reference	Exhibit Reference
1	Mustafa Siraag Abdu	IWS00000307	(MA/1-3) IWS00000308
2	Raby Abdulrahman	IWS00000881	
3	Habibrahman Abdulrahman	IWS00000883	
4	Lotfrahman Habibrahman (Massi) Abdulrahman	(IWS1) IWS00000882 (IWS2) IWS00001132	
5	Abraham Abebe	IWS00000847	
6	Karen Aboud	(IWS1) IWS00000130 (IWS2) IWS00001123	(KA/1-7) IWS00000130
7	Maryam Yusuf Adam	(IWS1) IWS00000128 (IWS2) IWS00001204	

	Witness Name	Statement Reference	Exhibit Reference
8	Yasin Yusuf Adam	(IWS1) IWS00000185	
		(IWS2) IWS00001205	
9	Feruza Afewerki	IWS00000331	
10	Elsa Mebrahut Afeworki	IWS00000280	(EA/1-3) IWS00000280
11	Shahnaz Afraseyabi	IWS00000767	
12	Mona Aghlani	IWS00000774	
13	Shahrokh Aghlani	(IWS1) IWS00001200	(SA/1) IWS00001203
		(IWS2) IWS00001202	(SA/2) IWS00001201
			(SA/3) IWS00001198
14	Nazanin Aghlani	IWS00001074	
15	Shahid (Shah) Ahmed	IWS00000388	(SA/1-5) IWS00000388
			(SA/6) IWS00000500
16	Zaki Ahmed	IWS00000389	
17	Sayeda Ahmed	IWS00000676	
18	Mohamed Ahmed	IWS00001113	(MA/1-4) IWS00001155
			(MA/5) IWS00000011
			(MA/6) IWS00000012
19	Fadumo Ahmed	IWS00000729	
20	Khalid Ahmed	IWS00000859	
21	Elias Aitequakrim	IWS00001030	(EA/1) IWS00001028
			(EA/2) IWS00001027
			(EA/3) IWS00001026
			(EA/4) IWS00001029
22	Ibtisam Alfawaz	IWS00000026	(IA/01) IWS00000031
			(IA/02) IWS00000029
			(IA/03) IWS00000027
			(IA/04) IWS00000024
			(IA/05) IWS00001174
			(IA/06) IWS00000022
			(IA/07) IWS00000030
			(IA/08) IWS00000028
			(IA/09) IWS00000025
23	Ammar Alkabib	MET00021446	
24	Ahmad Al Sadi	IWS00000645	(AA/1) IWS00000644
			(AA/2) IWS00000647
25	Randa Al-Arasi	IWS00000005	(RAA/1-4) IWS00000005
26	Zohra Al-Assad	IWS00000110	
27	Ahmed Al-Assad	IWS00001158	
28	Rania Al-Douri	IWS00000915	
29	Amal Al-Huthaifi	IWS00000637	
30	Mahmoud Al-Karad	IWS00000821	(MAK/1) IWS00000819
			(MAK/2) IWS00000791
31	Susan Al-Safadi	IWS00000598	(SA-S/1-7) IWS00000599
32	Aesem Alhajali	MET00039851	

	Witness Name	Statement Reference	Exhibit Reference
33	Shukri Ali	IWS00000897	
34	Iman Alkuedi	IWS00000205	
35	Arsiema Alula	IWS00001115	
36	Tiago Alves	IWS00000123	(TA/1 - 4) IWS00000124
37	Ines Tavares Alves	IWS00000436	(ITA/1-6) IWS00000437
38	Ethiopia Assefa	IWS00000891	
39	David Andrew Benjamin	IWS00000876	
40	Elpidio Bonifacio	IWS00001085	(EB/1-2) IWS00001085
41	Christine Bonnett	IWS00000699	(CB/1-3) IWS00000696
42	Aziza Boudafcha	IWS00000015	(AB/2) IWS00001068
43	Fatima Boujettif	IWS00000469	
44	Joseph Bryan	IWS00000553	
45	Alison Burke	IWS00000277	(AB/1) IWS00000277
46	Virgilio (Larry) Castro	IWS00001091	(VC/1) IWS00001091 (VC/2) IWS00001091 (VC/3) IWS00001091
47	Amina Chaer-Yemlahi	IWS00000956	
48	Ann Chance	IWS00000783	(AC/1) IWS00000782
49	Lee Jonathan Chapman	IWS00001000	(LC/1) IWS00000740 (LC/2) IWS00000737 (LC/3) IWS00000734 (LC/4) IWS00000730 (LC/5) IWS00000731 (LC/6) IWS00000738 (LC/7) IWS00000739 (LC/8) IWS00001002 (LC/9) IWS00001001 (LC/10) IWS00000999
50	Salah Eddine Chebiouni	IWS00000945	
51	Zakariya Chebiouni	IWS00001076	
52	Ahmed Chellat	IWS00001006	

	Witness Name	Statement Reference	Exhibit Reference
53	Hicham Cherbika	IWS00000038	(HC/01) IWS000000051
			(HC/02) IWS000000048
			(HC/03) IWS000000036
			(HC/04) IWS000000054
			(HC/05) IWS000000055
			(HC/06) IWS000000050
			(HC/07) IWS000000059
			(HC/08) IWS000000049
			(HC/09) IWS000000053
			(HC/10) IWS000000039
			(HC/11) IWS000000046
			(HC/12) IWS000000040
			(HC/13) IWS000000044
			(HC/14) IWS000000047
			(HC/15) IWS000000056
			(HC/17) IWS000000072
			(HC/18) IWS000000073
			(HC/19) IWS000000079
			(HC/20) IWS000000061
			(HC/21) IWS000000057
			(HC/22) IWS000000037
			(HC/23) IWS000000042
			(HC/24) IWS000000041
			(HC/25) IWS000000043
			(HC/26) IWS000000052
			(HC/27) IWS000000058
			(HC/28) IWS000000045
			(HC/29) IWS000000060
54	Hanan Cherbika	IWS00000016	
55	Yousra Cherbika	IWS00001032	(YC/1) IWS00001019
			(YC/2) IWS00001020
			(YC/3) IWS00001021
			(YC/4) IWS00001022
			(YC/5) IWS00001023
56	Michele Chiapetto	IWS000000679	
57	Sawsan Choucair	IWS00001080	
58	Nabil Choucair	IWS00001069	
59	Malak Choucair	IWS00001070	
60	Hisam Choucair	IWS00001197	(HC/1) IWS00001194
			(HC/2) IWS00001195
61	Jose Costa Cotelo	IWS00000984	
62	Edward Daffarn	IWS00000169	(ED/1-26) IWS00000169

	Witness Name	Statement Reference	Exhibit Reference
63	Zoe Dainton	IWS00000806	(ZD/1) IWS00000800
			(ZD/2) IWS00000801
			(ZD/3) IWS00000802
			(ZD/4) IWS00000803
			(ZD/5) IWS00000804
64	Jenny Beatrice Dainton	IWS00000939	(JD/1) IWS00000936
			(JD/2) IWS00000937
65	Francis Kapri Dean	IWS00001048	(FD/1) IWS00001048
			(FD/2) IWS00001004
			(FD/3) IWS00001005
66	Reem Dedrich	IWS00000102	(RD/1) IWS00000097
			(RD/2) IWS00000095
			(RD/3) IWS00000096
			(RD/4) IWS00000099
			(RD/5) IWS00000093
			(RD/6) IWS00000092
			(RD/7) IWS00000100
			(RD/8) IWS00000103
			(RD/9) IWS00000101
			(RD/10) IWS00000098

	Witness Name	Statement Reference	Exhibit Reference
67	Thomas Joseph Michael (Joe) Delaney	IWS00000265	(TJD/1) IWS00000414
			(TJD/3) IWS00000405
			(TJD/4) IWS00000254
			(TJD/5) IWS00000722
			(TJD/6) IWS00000271
			(TJD/7) IWS00000267
			(TJD/8) IWS00000256
			(TJD/9) IWS00000266
			(TJD/10) IWS00000262
			(TJD/11) IWS00000268
			(TJD/12) IWS00000270
			(TJD/13) IWS00001137
			(TJD/14) IWS00000253
			(TJD/15) IWS00000258
			(TJD/16) IWS00000260
			(TJD/17) IWS00000264
			(TJD/18) IWS00000259
			(TJD/19) IWS00000255
			(TJD/20) IWS00000252
			(TJD/21) IWS00000257
			(TJD/22) IWS00000263
			(TJD/23) IWS00000269
			(TJD/24) IWS00000398
			(TJD/25) IWS00000396
			(TJD/26) IWS00000415
			(TJD/27) IWS00000397
			(TJD/28) IWS00000403
			(TJD/29) IWS00000402
			(TJD/30) IWS00000407
			(TJD/31) IWS00000408
			(TJD/32) IWS00000413
			(TJD/33) IWS00000412
			(TJD/34) IWS00000406
			(TJD/35) IWS00000399
			(TJD/36) IWS00000401
			(TJD/37) IWS00000400
			(TJD/38) IWS00000411
			(TJD/39) IWS00000404
			(TJD/40) IWS00000409
			(TJD/41) IWS00000422
			(TJD/42) IWS00000416
			(TJD/43) IWS00000418
			(TJD/44) IWS00000420
			(TJD/45) IWS00000421
			(TJD/46) IWS00000419

	Witness Name	Statement Reference	Exhibit Reference
68	Emanuela Disaró	(IWS1) IWS00000543	
		(IWS2) IWS00001227	
69	Alfie Disson	IWS00000241	
70	Cordelia Disson	IWS00000242	
71	Harriboy (Harry) Disson	IWS00000672	
72	Charles (Charlie) Disson	IWS00000239	
73	Winston Dowarris	IWS00000916	(WD/1) IWS00000916
74	Salah Duale	IWS00000795	
75	Mahad Mahamed Egal	IWS00001010	(ME/1) IWS00001013
			(ME/2) IWS00001009
			(ME/3) IWS00001011
76	Noha El Baghdady	IWS00000671	
77	Mariama El Hassani	IWS00000966	
78	Karema El-Sawy	IWS00000424	
79	Zakaria Kamel El-Sawy	IWS00000427	
80	Karim El-Ansari	IWS00000088	
81	Mouna El-Ogbani	IWS00000844	(ME0/1) IWS00000287
			(ME02) IWS00000285
82	Nadia Elbouti	(IWS1) IWS00000947	(NE/1) IWS00001128
		(IWS2) IWS00001129	(NE/2) IWS00001131
			(NE/4) IWS00001125
			(NE/5) IWS00001127
83	Ahmed Elgwahry	IWS00000988	(EA/1-69) IWS00000988
84	Ferzana Elgwahry	IWS00000995	
85	Thomas Etienne	IWS00001163	(TE/1) IWS00001159
			(TE/2) IWS00001160
			(TE/3) IWS00001161
			(TE/4) IWS00001162
86	Daniel Eudey	IWS00000090	
87	Christos Fairbairn	IWS00001025	(CF/1) IWS00001024
88	Mary Folan	IWS00001088	(MKF/1(a)) IWS00000136
			(MKF/1(b)) IWS00000137
89	John Gerald Folan	IWS00000132	
90	Hime Haymanot Gashaw	IWS00000990	
91	Clarita Ghavimi	IWS00000943	
92	Maria Gil	IWS00000554	(MG/1) IWS00000565
			(MG/2) IWS00000556
			(MG/3) IWS00000566
			(MG/4) IWS00000557
			(MG/5) IWS00000558
			(MG/6) IWS00000559
			(MG/7) IWS00000555
			(MG/8) IWS00000562
			(MG/9) IWS00000563
			(MG/10) IWS00000560

	Witness Name	Statement Reference	Exhibit Reference
93	Turufat Yilma Girma	IWS00000848	(TG/1) IWS00000934
94	Giannino Gottardi	MET00013011	
95	Daniel Griffin	IWS00000173	(DG/1, 2, 3, 6-8, 9) IWS00000173 (DG/4) IWS00000174 (DG/5) IWS00000175
96	Mojda Habib	IWS00000917	(MH/1) IWS00000750
97	Ismail Hadgay	IWS00000200	(IH/1) IWS00000199 (IH/3) IWS00000197
98	Mohammed Abdul Hakim	IWS00000019	(MAH/1) IWS00000017 (MAH/2) IWS00000018
99	Sharon Haley	IWS00001219	(SH/1) IWS00001222
100	El Alami Hamdan	IWS00000176	
101	Samira Hamdan	IWS00001180	
102	Lina Hamide	IWS00001175	(LH/1-8) IWS00001177
103	Mohamed Hariri	IWS00001094	(MH/1) IWS00001097 (MH/2) IWS00001098 (MH/3) IWS00001108 (MH/4) IWS00001095 (MH/5) IWS00001099 (MH/6) IWS00001096 (MH/7) IWS00001104 (MH/8) IWS00001100 (MH/9) IWS00001107 (MH/10) IWS00001106
104	Hermine Harris	IWS00000087	
105	Helene Hartley	(IWS1) IWS00000492 (IWS2) IWS00001054	(HH/1) IWS00001055 (HH/2) IWS00001053
106	Makrem Harzi	IWS00000952	
107	Avni Haxhisefa	IWS00000296	(AH/1) IWS00001117
108	Jacqueline Haynes	IWS00000127	
109	Abdesalam Hedjoued	IWS00000651	
110	Samira Hemmid	IWS00000311	
111	Eman Hijazi	IWS00000639	
112	Lucy Ho	IWS00000655	(LH/1-2) IWS00000656
113	Van Quang Ho	IWS00000925	
114	Sayed Ibrahim	IWS00000323	
115	Abu Baker Mohammad Ibrahim	IWS00001238	(AB/1) IWS00001238
116	Erlinda Ignacio	IWS00000830	(EI/1) IWS00000827 (EI/2) IWS00000828
117	Wesley Ignacio	IWS00000826	(WI/1) IWS00000824
118	Salma Ismael	IWS00000745	

	Witness Name	Statement Reference	Exhibit Reference
119	Sohaila Ismail	IWS00001230	(SI/1) IWS00001233
			(SI/2) IWS00001232
			(SI/3-7) IWS00001233
			(SI/8) IWS00001233
			IWS00001240
			IWS00001240
120	Leanne Mya Jackson Le-Blanc	IWS00000177	
121	Maria Jafari	IWS00000744	
122	Sahar Jamalvatan	IWS00000325	
123	Mahboubah Jamalvatan	IWS00000078	
124	Sajad Jamalvatan	IWS00000068	(SJ/1) IWS00000068
125	Joseph John	IWS00000062	
126	Simon Jolly	IWS00001216	(SJ/1) IWS00001211
			(SJ/2) IWS00001210
			(SJ/3) IWS00001213
			(SJ/4) IWS00001212
			(SJ/5) IWS00001215
			(SJ/6) IWS00001214
			(SJ/7) IWS00001217
127	Corinne Simone Jones	IWS00000033	(CJ/1) IWS00000035
			(CJ/2) IWS00000032
			(CJ/3) IWS00000034
128	Milad Kareem	IWS00001077	
129	Betty Kasote	IWS00000768	
130	Mesrob Kassemajian	IWS00000951	(MK/1) IWS00000950
131	Behailu Kebede	IWS00000490	(BEK/1) MET00017055
		(MPS1) MET00007340	(BEK/2) MET00005190
		(MPS2) MET00006339	(BEK/3) MET00012983
		(MPS3) MET00007339	(BEK/4) MET00012984
		(MPS4) MET00008030	(BEK/5) MET00012985
		(MPS5) MET00008029	(BEK/6) MET00012986
		(MPS6) MET00012893	(BEK/7) MET00012987
		(MPS7) MET00013022	(BEK/8) MET00012988
		(MPS8) MET00015023	(BEK/9) MET00012989
			(BEK/10) MET00012982
			(BEK/11) MET00017049
			(MH/11) MET00014833
132	Youssef Khalloud	IWS00000473	(YK/1) IWS00000471
133	Rohema Khanom	COR00001147	(RRK/1) MET00040121
			(RRK/2) MET00040119
			(RRK/3) MET00040120
134	Rawan Khdeir	IWS00000204	
135	Walaa Khdeir	IWS00000208	

	Witness Name	Statement Reference	Exhibit Reference
136	Almaz Kinfu	IWS00000457	(AK/1) IWS00000610
		MET00006350	
137	Philip King	(IWS1)IWS00000592	(PK/1) IWS00000593
		(IWS2) IWS00001057	(PK1) IWS00000593
			(PK2) IWS00001067
			(PK3) IWS00001065
			(PK4) IWS00001056
			(PK5) IWS00001059
			(PK6) IWS00001058
			(PK7) IWS00001064
			(PK8) IWS00001066
			(PK9) IWS00001063
			(PK10) IWS00001062
138	Anna Krivsoun	MET00039926	
139	Sharon Laci	IWS00000818	(SL/1) IWS00000808
			(SL/2) IWS00000809
			(SL/3) IWS00000810
			(SL/4) IWS00000811
			(SL/5) IWS00000812
			(SL/6) IWS00000813
			(SL/7) IWS00000814
			(SL/8) IWS00000815
			(SL/9) IWS00000816
140	Mushtaq Lasharie	IWS00000603	(ML/1) IWS00000605
141	Beinazir Lasharie	IWS00000634	
142	Marcia Levi	IWS00000430	
143	David Lewis	IWS00000297	(DL/1) IWS00000303
144	Chin-Hsuan (Lydia) Liao	IWS00000505	LL/1- IWS00000509
		IWS00001191	LL/2 - IWS00000506
			LL/3 - IWS00000508
			LL/4 - IWS00000510
			LL/5 - IWS00000507
			LL/6 - IWS00000503
			LL/7 - IWS00000501
			LL/8 - IWS00000504
			LL/9 - IWS00000502
145	Monica Lokko	IWS00000138	(MK/1) IWS00000141
			(MK/2) IWS00000139
146	Hanife Macit	IWS00000904	(HM/1-3) IWS00000685

	Witness Name	Statement Reference	Exhibit Reference
147	Saira Malik	IWS00001087	(SM/1) IWS00000144
			(SM/2) IWS00000154
			(SM/3) IWS00000143
			(WA/0000) IWS00000147
			(WA/0001) IWS00000145
			(WA/0002) IWS00000147
			(WA0003) IWS00000157
			(WA0004) IWS00000153
			(WA0005) IWS00000146
			(WA0006) IWS00000156
			(WA0008) IWS00000142
			(WA0012) IWS00000151
			(WA0013) IWS00000152
148	Rukeyatu Mamudu	(IWS1) IWS00000067	
		(IWS2) IWS00001221	
149	Nida Mangoba	(IWS1) IWS00001084	
		(IWS2) IWS00001145	
150	Nina Masroh	IWS00000792	
151	Jacqueline McGrath	IWS00000914	
152	Paul Menacer	IWS00001031	
153	Ambrose Mendy	IWS00001075	
154	Clarrie Mendy	IWS00001185	
155	Sarah Mensah	IWS00000590	(SM/1-3) IWS00000652
156	Oscar Millan Gonzalez	IWS00001234	(OMG/1) IWS00000117
			(OMG/2) IWS00000120
157	Jason Miller	IWS00000495	
158	Joanne Minton	IWS00000284	(JM/1-2) IWS00000281
159	Sepideh Minaei Moghaddam	IWS00000392	(SMM/1) IWS00000392
160	Amina Mohamed	IWS00000857	
161	Kim Monte	IWS00000659	
162	Claudia Marina Ceden Montes	IWS00001229	
163	Alison Moses	IWS00000301	
164	Mohamed Mrimou	IWS00001172	(MM/1) IWS00000196
			(MM/2) IWS00000189
			(MM/3) IWS00000195
			(MM/4) IWS00000188
			(MM/5) IWS00000194
			(MM/6) IWS00000190
			(MM/7) IWS00000191
			(MM/8) IWS00000187
165	Peter John Murphy	IWS00000675	
166	Anne Murphy	IWS00001126	
167	Timothy Murphy	IWS00001049	

	Witness Name	Statement Reference	Exhibit Reference
168	Jamie Murray	IWS00001008	(JM/1) IWS00001012
			(JM/2) IWS00001014
169	Tagwa Mutwali	IWS00000942	
170	Nagawa (Prossy) Nalukwago	(IWS1) IWS00000009	(NPN/1,2,4-6) IWS00000009
		(IWS2) IWS00001118	(NPN/3) IWS00000008
171	Siar Naqshbandi	IWS00000327	
172	Samera Dawlatzai-Naqshbandi	IWS00000328	
173	Reshad Naqshbandi	IWS00000329	
174	Masi Naqshbandi	IWS00000334	
175	Mohammed Aref Neda	IWS00000880	
176	Paul Norbert	IWS00000667	
177	David O'Connell	IWS00000166	(DO/1) IWS00000167
178	Emma O'Connor	IWS00000121	
179	Kerry O'Hara	IWS00000991	
180	Sophia Olliverre	IWS00000463	
181	Lillian Olwa	(IWS1) IWS00000856	
		(IWS2) IWS00001181	
182	Tamora Hurjak Oni	IWS00000896	
183	Gitara Pahlavani	IWS00000929	
184	Michael Thomas Phillip Paramasavian	IWS00001003	
185	Chiraag Shantilal Patel	IWS00000855	
186	Shantilal Naranbhai Patel	IWS00000798	
187	Andreia Perestrelo	IWS00000349	
188	Mahamad Amin Popal	IWS00000884	
189	Jenny Quang	IWS00000766	
190	Shafika Ragab	IWS00000475	
191	Mohammed Ragab	IWS00000477	
192	Layla Raihani	IWS00000180	(LR/1) IWS00000180
193	Hind Raihani	(IWS1) IWS00000330	
		(IWS2) IWS00001190	
194	Adriana Ramirez	IWS00001116	
195	Cesar Ranito	IWS00000532	(CR/1-4) IWS00000530
196	Isabel Ranito	IWS00000533	
197	Mohammed Rasoul	IWS00000670	(MR/1-5) IWS00000669
198	Rhea Iligan Rojo	IWS00000066	
199	Christopher Roncolato	IWS00000840	(CR/1) IWS00000836
			(CR/2) IWS00000837
			(CR/3) IWS00000838

	Witness Name	Statement Reference	Exhibit Reference
200	Rebecca Ross	IWS00001036	(RSR/1) IWS00001040
			(RSR/2) IWS00001044
			(RSR/3) IWS00001041
			(RSR/4) IWS00001045
			(RSR/5) IWS00001039
			(RSR/6) IWS00001043
			(RSR/7) IWS00001035
			(RSR/8) IWS00001033
			(RSR/9) IWS00001034
			(RR/10) IWS00001046
201	Viviana Rullo	IWS00000161	(VR/1-VR/16) IWS00000163
202	Dawn Ryan	IWS00000250	(DR/1-2) IWS00000247
203	Jean Saalabi	IWS00000648	
204	Rebin Sartib Sabir	(IWS1) IWS00001224	(RS/1) MWP00000027
		(IWS2) IWS00001237	
205	Nasrin Sadat	IWS00000885	
206	Rawda Said	IWS00000920	
207	Salma Said	IWS00000919	
208	Yousif Saig	IWS00000314	IWS00000581
			IWS00000575
			IWS00000580
			IWS00000584
			IWS00000585
			IWS00000574
			IWS00000579
			IWS00000577
			IWS00000583
			IWS00000576
			IWS00000578
			IWS00000586
			IWS00000582
209	Mohammad Samimi	IWS00000298	
210	Virginia Sang	IWS00000773	
211	Solmaz Sattar	IWS00000769	
212	Robert Schwillens	IWS00000854	
213	Mohammed Sebbar	IWS00000903	
214	Negeste Semre	IWS00000954	
215	Alejandro Serrano	IWS00000853	
216	Farah Serroukh	IWS00000784	
217	Bernard Shaw	IWS00000461	
218	Genet Grebremaiam Shawo	IWS00001050	(GS/1-4) IWS00001050
219	Florentyna Sobieszczak	IWS00000831	
220	Michael Sobieszczak	IWS00001111	
221	Channel Spence	IWS00001235	(CS/1) IWS00001235

	Witness Name	Statement Reference	Exhibit Reference
222	Effi Stergiopoulou	IWS00000432	
223	Dougal Steward	IWS00000602	
224	Ivan Costa Suarez	IWS00000986	
225	Dorinda Encarnacion Suarez-Chans	IWS00000985	
226	Rita Tankarian	IWS00000434	
227	Gimja Tekie	IWS00000992	
228	Marion Telfer	(IWS1) IWS00001182	(MT/1-2) IWS00001188
		(IWS2) IWS00001188	
229	Wintom Temesgen	IWS00000382	(WT/1) IWS00000383
230	Nahom Tesfay Gebreegziabher	IWS00001086	
231	Yohannes Tesfaye	IWS00001089	
232	Selamawit Tesgay	IWS00000955	
233	William Thompson	IWS00000158	(WT/1 -WT/5) IWS00000158
234	Ibrahim Toukou	IWS00000335	
235	Loris Trevisan	IWS00000541	
236	Ramiro Urbano	(IWS1) IWS00000496	
		(IWS2) IWS00001207	
237	Vanessa Vieiro	IWS00000874	
238	Walid Wahbi	IWS00000113	(WW/1) IWS00000111
			(WW/4) IWS00000116
239	Hannah West	IWS00000021	
240	Meron Woldelessie Araya	IWS00001193	(MWA/1-5) IWS00001193
241	Amina Yabajadda	IWS00000785	
242	Ismail Yagci	IWS00000549	(IY/1-6) IWS00000547
243	Hulya Deniz Yagci	IWS00000641	
244	Mohamed Yahya	IWS00000567	(MY/1-2) IWS00000570
245	Khadija Yahya	IWS00000664	(KY/1) IWS00000665
246	Nadia Yousef	IWS00000338	
247	Eamon Zada	IWS00000989	(EZ/1) IWS00000978
			(EZ/2) IWS00000979
			(EZ/3) IWS00000980
			(EZ/2) IWS00000982
248	Adriana Zymberaj	IWS00000878	
249	CCC	IWS00000478	

List of MPS witnesses

MPS (called) witnesses

	Witness Name	Statement Reference	Exhibit Reference	Date of Oral Evidence
1	Neil Jerome	(MPS1) MET00023286	(NAJ/1) MET00023288	12.11.2018 – 13.11.2018
		(MPS2) MET00023694	(NAJ/2) MET00023291	
			(NAJ/3) MET00023285	
			(NAJ/4) MET00023294	
			(NAJ/5) MET00023293	
			(NAJ/6) MET00023290	
			(NAJ/7) MET00023287	
			(NAJ/8) MET00023292	
			(NAJ/9) MET00023289	
2	Nicholas Thatcher	(MPS1) MET00012582	(NT/1) MET00023282	12.11.2018
		(MPS2) MET00023284	(NT/2) MET00023283	
		(MPS3) MET00023692	INQ00000209	
		(MPS4) MET00018201	MET00023576	

MPS (read) witnesses

	Witness Name	Statement Reference	Exhibit Reference
1	Daniel Baker	MET00023354	
2	James Bourne	MET00007706	
3	John Burrows-Smith	MET00007306	
4	Shawn Chapman	MET00012694	
5	Michael Chattenton	MET00023693	
6	Eddy Clifford	MET00023356	
7	Steven Collins	MET00007907	
8	Rebecca Crowe	MET00013132	
9	Adrian Daniel	MET00012695	
10	Mark Dudley	MET00007710	
11	Francesca Elliott	MET00012954	
12	Andy Fairbrother	MET00012698	
13	Christopher Gillies	MET00007711	
16	Martin Hart	MET00007954	
17	David Heffernon	MET00007832	
18	Sarah Hoyle	COR00000955	
19	Anu Ibrahim	MET00012961	(ANI/1) MET00024028
			(ANI/2) MET00024025
			(ANI/3) MET00024029
			(ANI/4) MET00024027
			(ANI/5) MET00024026
20	Alice Jacobs	MET00012699	
21	Tony Jones	MET00007915	(TJJ/1) MET00023663
			(TJJ/2) MET00023662

	Witness Name	Statement Reference	Exhibit Reference
22	Dan Keane	MET00007916	
23	Natasha Langley	MET00007717	
24	Darren Larder	MET00007917	
25	Ian McGowan	MET00007718	
26	Ashley Meek	MET00023353	
27	Iain Nicholls	MET00007720	
28	Anthony Neave	MET00023633	
29	Patrick O'Riordan	MET00013130 (1st witness statement)	
		MET00013136 (2nd witness statement)	
30	Maarku Paajarvi	MET00012705	
31	Ross Parker	MET00013134	
32	Michael Pearce	MET00007606	
33	Graham Price	MET00012967	
34	Joshua Rees	MET00017468 (1st witness statement)	
		MET00017463 (2nd witness statement)	
36	Ian Reeve	MET00023352	(IR/1) MET00023625
			(IR/2) MET00023627
			(IR/3) MET00023626
37	Chris Rigg	MET00012706	
38	Kiran Sangha	MET00007837	
39	Mark Simpson	MET00012581	
40	Steven Spiteri	MET00007610	
41	Rebecca Stead	MET00007925	
42	Charles Stockford	MET00012707	
43	Philip Stone	MET00013129	
44	Tanya Valente	MET00012801	
45	Paul Warnett	MET000080605	
		MET00018082	
46	Chris Watts	MET00023355	
47	Graham Winch	METS00020664 (1st WS)	(GNW/1.1) METS00020665
		MET00039532 (2nd WS)	(GNW/1.2) METS00020666
			(GNW/2) METS00020662
			(GNW/3) METS00020663
			(GNW/4) MET00039533

List of LAS witnesses

LAS (called) witnesses

	Witness Name	Statement Reference	Exhibit Reference	Date of Oral Evidence
1	Paul Woodrow	LAS00000009	(A) LAS00000005	13.11.2018
			(B) LAS00000001	
			(C) LAS00000008	
			(D) LAS00000002	
			(E1) LAS00000003	
			(E2) LAS00000006	
			(E3) LAS00000007	
			(F) LAS00000004	

LAS (read) witnesses

	Witness Name	Statement Reference	Exhibit Reference
1	Graham Barwick	MET00013951	(GCB/1) MET00023193
2	Maria Conyers	MET00013955	(MAC/1) MET00019057
			(MAC/2) MET00019058
			(MAC/3) MET00019054
3	Stuart Chrichton	MET00017535	
4	Jennifer Doidge	MET00016783	
5	Sarah Galka	MET00019945	
6	Andrew Godfrey	MET00014994	(ANG/1) MET00023194
7	Paul Hammond	MET00014408	(PRH/1) MET00023195
8	Mark Hodson	MET00017061	(MH)/1) MET00023339
9	Laurence Ioannou	MET00010862	(LJI/1) MET00019056
			(LJI/2) MET00019059

	Witness Name	Statement Reference	Exhibit Reference
10	Russell Lobjoit	MET00014397	(RSL/1) MET00023199
			(RSL/2) MET00023200
			MET00023201
			MET00023202
			MET00023203
			MET00023204
			MET00023205
			MET00023206
			MET00023207
			MET00023208
			MET00023210
			MET00023211
			MET00023212
			MET00023213
			MET00023214
			MET00023215
			MET00023216
			MET00023217
			MET00023218
			MET00023219
			MET00023220
			MET00023221
			MET00023222
			MET00023223
			MET00023224
			MET00023225
			MET00023226
			(RSL/3) MET00023198
11	Kevin Mansford	MET00015659	(KWM/1) MET00023340
12	Stuart Matthews	MET00013948	(SJM/1) MET00019055
13	Gayna Morris	MET00016785	(GJM/1) MET00023338
14	Mifta Murad	MET00014412	(MMM/1) MET00023227
15	Colin Passey	MET00013950	(CAP/1) MET00019932
16	Colin Pinnington	MET00012651	
17	Ian Sibthorpe	MET00015658	(IPS/1) MET00023228
18	Elizabeth Woodhouse	MET00015657	
19	Simon Woodmore	MET00010781	(SPW/1) MET00019935

List of RBKC and TMO witnesses

RBKC and TMO (called) witnesses

	Witness Name	Witness Organisation	Statement Reference	Exhibit Reference	Date of Oral Evidence
1	Robert Black	TMO	TMO10048961		15.11.2018
2	Teresa Brown	TMO	TMO10048960	TMO00840342	16.11.2018
3	Hash Chamchoun	TMO	TMO10048962		16.11.2018
4	Nickolas Layton	RBKC	(MPS) MET00007967 (IWS) RBK00029034	(NLE/1) MET00018301 (NL/1) RBK00029036 (NL/2) RBKC00029035 (NL/3) RBK00029032 (NL/4) RBK00029033	15.11.2018
5	Michael John Scott Rumble	RBKC	(MPS) RBK00028988 (IWS) RBK00029037	(MJSR/1) RBK00029038 (MJSR/2) RBK00004396 (MJSR/3) RBK00013294 (MJSR/4) RBK00029039 (MJSR/5) RBK00028838	15.11.2018
6	Graham Webb	TMO	TMO10048963		16.11.2018

RBKC and TMO (read) witnesses

	Witness Name	Witness Organisation	Statement Reference	Exhibit Reference
1	John Allen	RBKC	RBK00035691	(JA/1) RBK00035692 (JA/2) RBK00035693 (JA/3) RBK00035694 (JA/4) RBK00035695 (JA/5) RBK00035696 (JA/6) RBK00035697 (JA/7) RBK00035698 (JA/8) RBK00035699 (JA/9) RBK00035700 (JA/10) RBK00035701 (JA/11) RBK00035702 (JA/12) RBK00035703 (JA/13) RBK00035704 (JA/14) RBK00035705 (JA/15) RBK00035706 (JA/16) RBK00035707 (JA/17) RBK00035708 (JA/18) RBK00035709 (JA/19) RBK00035710 (JA/20) RBK00035711 (JA/21) RBK00035712 (JA/22) RBK00035713

	Witness Name	Witness Organisation	Statement Reference	Exhibit Reference
1	John Allen	RBKC		(JA/23) RBK00035714
				(JA/24) RBK00035715
				(JA/25) RBK00035716
				(JA/26) RBK00035717
				(JA/27) RBK00035718
				(JA/27) RBK00035728
				(JA/28) RBK00035719
				(JA/29) RBK00035720
				(JA/30) RBK00035721
				(JA/31) RBK00035722
				(JA/32) RBK00035723
				(JA/33) RBK00035724
				(JA/34) RBK00035725
				(JA/35) RBK00035726
				(JA/36) RBK00035727
				(JA/38) RBK00035729
				(JA/39) RBK00035730
				(JA/40) RBK00035731
				(JA/41) RBK00035732
				(JA/42) RBK00035733
				(JA/43) RBK00035734
				(JA/44) RBK00035735
				(JA/45) RBK00035736
				(JA/46) RBK00035737
				(JA/47) RBK00035738
				(JA/48) RBK00035739
				(JA/49) RBK00035740
				(JA/50) RBK00035741
				(JA/51) RBK00035742
				(JA/52) RBK00035743
				(JA/53) RBK00035744
				(JA/54) RBK00035745
				(JA/55) RBK00035746
				(JA/56) RBK00035747
				(JA/57) RBK00035748
				(JA/58) RBK00035749
				(JA/59) RBK00035750
				(JA/60) RBK00035751
				(JA/61) RBK00035752
				(JA/62) RBK00035753
				(JA/63)RBK00035754
				(JA/64) RBK00035755
				(JA/65) RBK00035756
				(JA/66) RBK00035757
				(JA/67) RBK00035758

	Witness Name	Witness Organisation	Statement Reference	Exhibit Reference
1	John Allen	RBKC	(IWS2) RBK00035691	(JA/68) RBK00035759
				(JA/69) RBK00035760
				(JA/70) RBK00035761
				(JA/71) RBK00035762
				(JA/72) RBK00035763
				(JA/73) RBK00035764
				(JA/74) RBK00035765
				(JA/75) RBK00035766
				(JA/76) RBK00035767
				(JA/77) RBK00035768
				(JA/78) RBK00035769
				(JA/79) RBK00035770
				(JA/80) RBK00035771
				(JA/81) RBK00035772
				(JA/82) RBK00035773
				(JA/83) RBK00035774
				(JA/84) RBK00035775
				(JA/85) RBK00035776
				(JA/86) RBK00035777
				(JA/87) RBK00035778
				(JA/88) RBK00035779
				(JA/89) RBK00035780
				(JA/90) RBK00035781
				(JA/91) RBK00035782
				(JA/92) RBK00035783
				(JA/93) RBK00035784
				(JA/94) RBK00035785
				(JA/95) RBK00035786
				(JA/96) RBK00035787
				(JA/97) RBK00035788
				(JA/98) RBK00035789
				(JA/99) RBK00035790
				(JA/100) RBK00035791
				(JA/101) RBK00035792
				(JA/102) RBK00035793
				(JA/103) RBK00035794
				(JA/104) RBK00035795
				(JA/105) RBK00035796
				(JA/106) RBK00035797
				(JA/107) RBK00035798
				(JA/108) RBK00035799
				(JA/109) RBK00035800
				(JA/110) RBK00035801
				(JA/111) RBK00035802
				(JA/112) RBK00035803

	Witness Name	Witness Organisation	Statement Reference	Exhibit Reference
1	John Allen	RBKC	(IWS2) RBK00035691	(JA/113) RBK00035804
				(JA/114) RBK00035805
				(JA/115) RBK00035806
				(JA/116) RBK00035807
				(JA/117) RBK00035808
				(JA/118) RBK00035809
				(JA/119) RBK00035810
				(JA/120) RBK00035811
				(JA/121) RBK00035812
				(JA/122) RBK00035813
				(JA/123) RBK00035814
				(JA/124) RBK00035815

List of Helicopter Pilot witnesses

Helicopter Pilot (read) witnesses

	Witness Name	Statement Reference	Exhibit Reference
1	Jason Appleton	MET00017487	
2	Colin Barker	MET00007705	
3	Lynne Callaghan	MET00013128	
4	Lucy Creed	MET00013245	
5	David Crisall	MET00015672	
6	Bradley Franklin	MET00021777	MET00018084
7	Scott Glasscock	MET00012957	SPG/1 MET00018156
			SPG/2 MET00018147
			SPG/3 MET00018136
			SPG/4 MET00018152
			SPG/5 MET00018153
			SPG/6 MET00018143
			SPG/7 MET00018137
			SPG/7 MET00018137
			SPG/8 MET00018142
			SPG/9 MET00018140
			SPG/10 MET00018146
			SPG/11 MET00018145
			SPG/12 MET00018160
			SPG/13 MET00018139
			SPG/14 MET00018141
			SPG/15 MET00018151
			SPG/16 MET00018144
			SPG/17 MET00018148
			SPG/18 MET00018138
			SPG/19 MET00018158
			SPG/20 MET00018157
			SPG/21 MET00018149
			SPG/22 MET00018150
			SPG/23 MET00018154
			SPG/24 MET00018159
			SPG/25 MET00018155
			SPG/28 MET00018172
			MET00018168
			MET00018173
			MET00018167
			MET00018177
			MET00018182
			MET00018180
			MET00018179
			MET00018181

	Witness Name	Statement Reference	Exhibit Reference
7	Scott Glasscock	MET00012957	MET00018165
			MET00018161
			MET00018166
			MET00018164
			MET00018171
			MET00018176
			MET00018175
			MET00018169
			MET00018178
			MET00018162
			MET00018170
			MET00018163
			MET00018184
			MET00018183
			MET00018185
			MET00018186
			MET00018188
			MET00018187
			MET00018189
8	Philip Hanson	MET00013123	
9	Simon Hepworth	MET00012959	MET00018761
		MET00018200	
10	Gavin Holmes	MET00007714	
11	Andrew Hutchinson	MET00012960	
12	James John	MET00013238	MET00018762
13	Tony Johnson	MET00012962	
14	Douglas MacDonald	MET00013126	
15	Roisin Morgan	MET00021778	MET00018093
			MET00018094
			MET00018095
			MET00018096
			MET00018097
			MET00018098
			MET00018099
			MET00018100
			MET00018101
			MET00018102
			MET00018103
			MET00018104
			MET00018105
			MET00018106
			MET00018107
			MET00018108
			MET00018109
			MET00018110

	Witness Name	Statement Reference	Exhibit Reference
16	Michelle Helen Pearce	MET00023249	MET00023636
			MET00023635
17	Paul Sochon	MET00021776	MET00021518
			MET00021517
18	Nicholas Spencer	MET00007728	MET00021516
			MET00018086
			MET00018089
19	Shaun Turner	MET00012970	MET00018127
			MET00018131
			MET00018113
			MET00018117
			MET00018122
			MET00018135
			MET00018124
			MET00018121
			MET00018126
			MET00018118
			MET00018129
			MET00018119
			MET00018116
			MET00018112
			MET00018133
			MET00018130
			MET00018114
			MET00018115
			MET00018132
			MET00018134
20	Paul Watts	MET00012891	MET00018092
		MET00015676	

List of Gas Operative witnesses

Gas Operative (read) witnesses

	Witness Name	Statement Reference	Exhibit Reference
1	Pete Baynard	MET00012826	MET00018454
2	Chris Cuthbert	MET00012824	
3	Tony Day	MET00012830	
4	Dave Edwards	MET00007956	MET00012912
5	James Harrison	MET00012831	
		MET00018804	MET00018311
		CAD00003019	MET00018307
			MET00018304
			MET00018308
			MET00018306
			MET00018305
			MET00018303
			MET00018310
			MET00018309
			MET00018302
6	Ryan Hill	MET00012829	
7	Patrick Kelly	MET00012836	
8	Jason Knightley	MET00007821	
9	Neale Milam	MET00012828	

Glossary

135 ladder	A ladder which is 13.5 metres in length
AC	Assistant Commissioner
ACM	Aluminium Composite Material
ACP	Aluminium Composite Panel
ADB	Approved Document B
ADSU	Automatic Distress Signal Unit
Aerial appliance	A vehicle-mounted ladder with a reach of 32 metres
AFA	Automated Fire Alarm
ALP	Aerial Ladder Platform
AOM	Assistant Operations Manager
AOV	Automatic Opening Vent
Appliance	Fire engine
BA	Breathing Apparatus
BAECP	Breathing Apparatus Entry Control Point
BARIE	Breathing Apparatus Radio Interface Equipment
BCC	Bridge Co-ordination Centre
BECC	Borough Emergency Control Centre
BRE	Building Research Establishment
BSR	Bereaved, Survivors and Residents
CAD	Computer-Aided Dispatch (System)
CCTV	Closed-circuit television
CM	Crew Manager
CN	Firefighter's Contemporaneous Notes
CP/CPs	Core Participant(s)
CRO	Control Room Officer
CSS	Command Support System
CU	Command Unit
DAC	Deputy Assistant Commissioner
DCI	Detective Chief Inspector
DCLG	Department for Communities and Local Government (see MHCLG)

DIVOS	Voice recorder which records 999 calls
DPA	Data Protection Act 2018
DRM	Dry Rising Main
DSE	Dangerous Structures Engineer
DVI	Disaster Victim Identification
ECB	Entry Control Board
ECO	Entry Control Officer
EDBA	Extended Duration Breathing Apparatus
Enforcer	Battering ram used to break down doors
EPDM	Ethylene Propylene Diene Monomer (rubber)
FBU	Fire Brigades Union
FERG	Forensic Examination Reference Group
FF	Firefighter
FRA	Fire risk assessment
FRS	Fire and Rescue Service
FRU	Fire Rescue Unit, an emergency vehicle that carries specialist rescue equipment and is the only emergency vehicle to carry EDBA. It does not carry a ladder or water.
FSG	Fire Survival Guidance
GM	Group Manager
GRA 3.2	Generic Risk Assessment 3.2
Halligan bar	Similar to a crowbar, used to force entry by a door
HART	Hazardous Ambulance Response Team
IC	Incident Commander
ICCS	Integrated Control and Communications System
IEC	Immediate Emergency Care
ITC	Incident Type Code (LFB 999 operations attribute a type code to an incident which creates a pre-determined attendance, i.e. the number of appliances which are despatched)
JESIP	Joint Emergency Services Interoperability Principles
LALO	Local Authority Liaison Officer
LAS	London Ambulance Service
LESLP	London Emergency Services Liaison Panel
LFB	London Fire Brigade
MDT	Mobile Data Terminal

METHANE (message)	Major incident declared, Exact location, Type of incident, Hazards, Access, Number and type of casualties, Emergency services present and required
MHCLG	Ministry of Housing, Communities and Local Government (previously DCLG)
MMA	Modular Management Agreement
MPS	Metropolitan Police Service
NILO	National Inter-Agency Liaison Officer
NPAS	National Police Air Service (Police helicopter)
NPCC	National Police Chiefs' Council
OM	Operations Manager
ORD	Operational Risk Database
ORR	Operational Response Report
ORT	Operational Review Team
OSU	Operation Support Unit
PDA	Pre-determined attendance
PEG	Protective Equipment Group
PIR	Polyisocyanurate
POM	Principal Operations Manager
PPV	Positive Pressure Ventilation
PRC	Performance Review of Command
Pump	Appliance with a 9-metre ladder
Pump ladder	Appliance with a 13.5-metre ladder
RBKC	Royal Borough of Kensington and Chelsea
RCCB	Residual Current Circuit Breaker
RfC/RFC	Request for Change
RIF	Reference Information File (999 call guidance for operator)
RLR	Recognised Legal Representative
RSO	Resource Support Officer
RVP	Rendezvous Point
SAI	Senior Accident Investigator
SDBA	Standard Duration Breathing Apparatus
SIL	Short Incident Log
SM	Station Manager
SOM	Senior Operations Manager

Tally	A piece of equipment which contains a record of the name and rank of a firefighter and the amount of air in their BA cylinder. It is given by the firefighter to the ECO at the point of entry and is retrieved by the firefighter on exit.
TCG	Tactical Co-ordination Group
TCM	Tactical Co-ordination Meeting
TIC	Thermal Imaging Camera
TMO/KCTMO	Tenant Management Organisation (Kensington and Chelsea Tenant Management Organisation)
TSG	Territorial Support Group (a specialist unit of the MPS)
Turntable ladder	A vehicle with a ladder which has a reach of 32 metres. It has a detachable cage which can contain three people
uPVC	Unplasticised Polyvinyl Chloride
URN	Unique Reference Number
VISION	A system which records the location of an incident and despatches the nearest appropriate resources in response to emergency calls
WM	Watch Manager
XPS	Extruded Polystyrene

ISBN 978-1-5286-1602-7
(Volume 4 of 4)
4 volumes not available separately