

THE NEED TO CORRELATE FIREFIGHTER ACTIVITY AND SMOKE SPREAD DURING STAGE TWO AND THREE OF THE FIRE

In my Phase One report¹ I highlighted that the implementation of a “stay-put” strategy is based on preventing the migration of smoke into common areas and residential units beyond the area of the fire. It is accepted that occupant egress and fire fighter operations will result in the opening of doors and therefore have the potential of allowing smoke to migrate away from the area of the fire and potentially into lobbies, stairs and other units. Therefore, to limit such smoke migration, multiple layers of compartmentalization are established. Fire resistance requirements placed on doors and walls separating the units from each other, on the lobbies and stairs, as well as self-closing mechanisms for doors, are intended to deliver adequate performance and robustness to this strategy. Nevertheless, there is significant evidence that, during the Grenfell Tower fire, smoke managed to migrate from areas of the building exposed to the fire to areas that should have been protected by compartmentalization. This evidence points to this occurring as early as Stage Two of the fire.

There are multiple 999 calls during Stage Two (01:05:57 – 01:30:00) reporting smoke in the lobbies, as the fire spread vertically up the building from Flat 16 on Level 4 to the roof above Level 23. Most of these calls centre around the middle of the building, with smoke in lobbies reported by callers on Levels 10, 11, 12, and 14 timed between 01:25:16 and 01:28:26 [LFB00000308, LFB00000309, LFB00000307, INQ00000282]. Of these reports, only Level 14 is clearly reported as having a significant amount of smoke. Prior to this there is also a report of a smoke-filled lobby higher up the building on Level 22 at 01:21:24 [LFB00000303]. This latter report is likely to be due to internal spread of smoke, as the fire had not reached Level 22 by this stage.

From the onset of Stage Three (01:30 – 02:00), 999 callers consistently report thick black smoke considered unpassable by residents in the lobbies. These include the 12th, 14th, 16th, 18th, and 21st to 23rd Level lobbies within the period 01:30 – 01:40 alone [LFB00000318, LFB00000678, LFB00000321, INQ00000280, LFB00000662, LFB00000667, LFB00000315, LFB00000329]. Further 999 calls for the rest of Stage Three report a similar situation on the 10th, 11th, 19th and 20th Levels [LFB00000319, LFB00000330, LFB00000336, LFB00000323, LFB00000334, LFB00000444]. Some of these also report smoke in the stairwell itself. It is clear that, from the onset of Stage Three, internal smoke spread is fairly ubiquitous above Level 10.

Section 5.3.1 of my Phase One report presents a series of images from night vision cameras that show smoke emerging from windows on residential units of the building which were still not compromised by the fire at that stage. The time stamp recorded on these images is as early as 02:00:12. As I have explained in that section, that movement of smoke is only possible if compartmentalization is breached for at least two units.

The early and significant failure of compartmentalization needs to be clearly understood. Phase One reports by myself¹ and Dr Lane² have highlighted a number of mechanisms by which smoke could have spread internally. As noted in Section 4.4 of my Phase One report, re-entrant fires were reported during Stage Two on Levels 5, 12, and 22 at approximately 01:18, 01:24, and 01:28. Re-entrant fires have been shown to have the potential to breach closed doors. Nevertheless, the timelines associated with the fire development rule out this mechanism as being responsible for initial reports of smoke logged lobbies during Stage Two. It is more likely that fire induced door failure could be a contributing factor in the latter part of Stage Three, but this is not likely to be a significant contributing factor during Stage Two or earlier in Stage Three. Therefore, a likely contributing factor at these early stages, is human intervention complicated by the potential inadequate performance of self-closing door mechanisms.

Section 5.3.2.3.3 of my Phase One report highlighted information taken from firefighter statements indicating numerous cases where firefighting activities affected compartmentation, principally front doors of flats. While exact timings are so far unknown, statement MET00005429 reports multiple forced door entries on Level 12 to gain access to flats for search and rescue. It appears that the lobby may already have been smoke logged. With the stair door open to accommodate the hose, firefighters attempted to fight fires on this floor in multiple flats in order to gain entry and search. This activity would lead to increased smoke logging and compromise of common areas and may be linked to the early emergence of smoke from the west face of Flat 94 on Level 12 at the end of Stage 3 (approx. 02:00) observed in MPS drone footage. MET00005467 reports forced entries on Level 11 using sledgehammers and axes. While exact times are unknown, it is possible that these actions took place before the end of Stage Three, as MET000080602 reports that as of 02:05, firefighters struggled to get past Levels 11 and 12 for a number of hours subsequently, due to the severe conditions on those levels.

My analysis of verbal firefighter testimony given to the inquiry has begun but remains work in progress. Nevertheless, on a preliminary analysis, it is evident that there were further incidents of firefighting activities taking place beyond the location of the initial fire in Flat 16 in Stage Two. Firefighters placed themselves on each level up to Level 12 and also on Level 16 performing search and rescue activities during this stage [MET000083321]. Further activities during Stage Three are yet to be analysed.

At the time of writing this report many of the survivors who are being called to give oral evidence have yet to deliver their verbal testimony. This vital information on the actions of the building occupants is still missing.

The interactions between occupants and fire fighters with the doors inside the building are of critical importance to the performance of compartmentalization and to the validity of the “stay-put” strategy. To better understand these interactions, it is necessary to determine in much greater detail the movements of occupants and firefighters and this will require very careful analysis of the evidence which has been gathered in Phase One of the Inquiry’s work. These issues require significant attention during Phase Two, when I (and other Inquiry experts) intend to carry out more detailed work on the available evidence, in terms of the timing, location and actions of occupants and firefighters and the consequences of those actions in terms of fire and smoke spread until the end of Stage Three.

¹ J.L. Torero, Grenfell Tower: Phase 1 Report, GFT-1710-OC-001-DR-01, May 2018.

² B. Lane, Grenfell Tower – fire safety investigation Phase 1 Report, April 2018.