

Report title

Firefighting in high rise buildings

Meeting	Date
Operational Directorate's Co-ordination Board	8th December 2014
Report by	Document Number
Assistant Commissioner, Operational Procedures	ODCB/12/14

Summary

On behalf of the Chief Fire Officers Association (CFOA) national GRA working group, London Fire Brigade (LFB) played a central role in reviewing the [Generic Risk Assessment \(GRA\) 3.2 Fighting fires - In high rise buildings](#) and this resulted in a significant amount of amendments being made to this GRA.

At the conclusion of this work Operational Procedures (OP) undertook a comparative review of the new amended GRA and the existing LFB high rise policy and risk assessment.

This review identified that the revised GRA contained a number of new hazards and control measures which were not reflected in the LFB high rise policy.

This comparison initiated amendments being made to the LFB policy ([PN 633 - High rise firefighting](#)) to ensure it included the content of GRA 3.2. The new draft policy 633 has been consulted on with Heads of Service, but has yet to be submitted to the Brigade Joint Council for Health and Safety at Work (BJCHSW).

The purpose of bringing this new draft policy 633 to the attention of ODCB (the Board) is that a key effect of recognising and including the content of GRA 3.2 into this policy is the need to re-evaluate the LFB's Pre-Determined Attendance (PDA) resources, mobilised to a high rise incident.

This review has also taken place within the context of matters raised as part of Dynamic and Intelligent Operational Training (DIOT) reporting to the Board, regarding the need for additional equipment to tackle fires in high rise buildings.

The DIOT process has indicated that the provision of controlled dividing breechings and some form of carrying solution (often referred to as a 'high rise' or 'first strike' bag) to enable the easier and more effective movement of equipment to upper floors at high rise incidents would improve LFB's operational response.

A separate report setting out progress to develop and trial this new equipment will follow in due course, but, for the purposes of this report, it would seem prudent to place this report within this wider context and to confirm for the Board that these proposed changes are part of a broader programme of improvement which is underway to enhance the LFB's response to dealing with fires in high rise buildings.

The following document is attached to this report for background information:

- Appendix 1 - Note on high rise mobilisation data and fire size categorisation

In addition, the following documents are available to the board for reference:

- Draft high rise firefighting policy 633
- LFB risk assessment for draft high rise firefighting policy 633

Recommendations

Formal agreement is sought to:

- i) Approve option 2 for a PDA of four pumping appliances to attend fires in all high rise premises
- ii) Submit the amended draft Policy 633 – High rise firefighting to BJCHSW with the Board's decision on the appropriate PDA to high rise fires
- iii) Accept that the proposed method of evaluation is implemented to ensure that the benefits associated with increasing the PDA are realised.

Background

1. For the purpose of this report, a high rise building is defined as a building containing 6 or more floors.
2. With regard to fires in high rise buildings, the LFB's ability to implement effective external firefighting and/or external rescue operations are limited by the capability to work at height using ladders and aerial appliances.
3. In addition to a building's height, modern methods of construction and the resulting absence of any 'openings' means that LFB typically implements internal firefighting and rescue operations, which depend upon bespoke procedures, equipment and building facilities.
4. The review of GRA 3.2 included an analysis of recent incidents of note such as, Lakanal House, Salamanca Place and Shirley Towers. In doing so a further 17 significant hazards were identified to be potentially associated with high rise firefighting, each with a control measure to reduce risk to acceptable levels.
5. The publication of the new GRA 3.2 in January 2014 initiated a review of the LFB policy and local risk assessment with the subsequent addition of these new hazards and control measures.
6. The amended LFB risk assessment identified that the extant policy required review and amendment. The revised draft PN 633 now reflects all of the hazards and control measures that have been identified, both within the revised LFB local risk assessment and new GRA 3.2.

Fires in high rise buildings

7. The Brigade's attendance at high rise residential buildings was a key issue during LSP5 consultation. In that context, the debate was about the importance of a third appliance attending such incidents and the speed of arrival.
8. As part of LSP5 supporting documentation, the brigade published data about the number of primary fires in buildings, the number of fires in high rise buildings (which have 6 floors or more) and the number of fires occurring in high rise buildings on or above the 6th floor. That dataset, which has been updated, provides a useful context for this report to underpin the considerations about changing the PDA at a known fire in a high rise building from three to four pumping appliances.
9. It is not a simple matter to extract detailed information from Brigade systems concerning mobilisations to, and severity of, fires in high rise buildings. Some work is needed to approximate the available data, and this is explained in the 'Note on high rise mobilisation data' in appendix 1.

10. The data in table 1 below shows that for the 3 year average between 2011 and 2013, 9209 primary fires occurred in buildings. Of these 934 (10.1%) were in high rise buildings, with 206 (2.2%) of these fires occurring on the 6th floor or above.

	Primary fires in all buildings (residential and non-residential)		Primary fires in high rise buildings (6 floors or more)		Primary fires in high rise buildings at high rise height (6 th floor or higher)	
	No	% of all primary fires	No	% of primary fires in buildings	No	% of primary fires in buildings
2011	9643	74.8	998	10.3	209	2.2
2012	9107	78.1	944	10.4	218	2.4
2013	8878	78.7	859	9.7	192	2.2
Total for three years	27628		2801		619	
Three year average	9209	77.2	934	10.1	206	2.2

Table 1 - Primary fires data

11. The Board will be aware that primary fires vary considerably in size and impact, as do the Brigade resources needed to deal with them.
12. Using a 'fire size' categorisation (see appendix 1) it is possible to state that, for the three year sample, 133 of the 619 primary fires in high rise buildings, on or above the 6th floor, were of medium to large size. The data also shows that the frequency of fires above the 6th floor is relatively low compared to the total number of primary fires.

Mobilisations to fires in high rise buildings

13. The volume of incidents provide one measure of the Brigade workload and the likelihood of serious fires in high rise buildings. However, the number of pumping appliances initially mobilised to fires in high rise buildings provide a better guide to the impact of any change in PDA.
14. Table 2 below shows the number of pumping appliances that were initially mobilised to fires occurring at high rise buildings as well as the annual number of these mobilisations. This is either as a result of the specific high rise ITC (A1HR) or as a result of the fire ITC (A1) to a high rise building.

Year	Number of pumping appliances (PA) initially mobilised					Total
	1PA	2PA	3PA	4PA	5PA	
2011	55	730	1,094	89	3	1,971
2012	37	640	964	109	3	1,753
2013	38	588	945	52	4	1,627
Three year average	43	653	1,001	83	3	

Table 2 - Pumping appliances initially mobilised & annual totals

15. Based on a change in policy (from three to four pumping appliances) in A1HR mobilisations we anticipate an additional 1000 pumping appliances per year being mobilised. This calculation is based on adding one extra pumping appliance to the number of mobilisations that three pumping appliances attended over the 3year average.

Analysis of GRA

16. A gap analysis between the national GRA and existing LFB high rise risk assessment and policy identified the following 17 'new' hazards:
 - Floor/ceiling collapse
 - Wall panel failure
 - Construction technique
 - Information gathering
 - Cable entanglement
 - Oxygen deficient/toxic atmosphere
 - Downward fire spread
 - Fires on multiple floors
 - Limited ventilation
 - Poor housekeeping/High fire load
 - Unknown premises/unknown structural changes
 - Evacuation
 - Heating Ventilation Air Conditioning (HVAC) systems
 - Failure of electrical systems (including fire lifts)
 - Persons shut in lift
 - Buildings under construction/renovation
 - Moral pressure and moral factors to act where insufficient resources are present.
17. The control measures associated with these additional hazards include:
 - Additional safety officers internally and externally
 - Early designation and deployment of emergency crews
 - Sufficient weight of attack
 - Additional resources.
18. In total, the new GRA 3.2 identifies 32 hazards with associated risks and control measures. The LFB risk assessment identifies 38 hazards with associated risks and control measures.
19. The analysis of recent high rise incidents (such as those which occurred at Shirley Towers and Lakanal, as part of both the GRA review and the local risk assessment) also recognised that a combination of these hazards is reasonably foreseeable and can make a significant contribution to both the severity and complexity of an incident.
20. It is reasonable to say that these additional hazards have always been present, but they have not previously been explicitly identified nor have they been given appropriate recognition in LFB policy and training. As a consequence, Incident Commanders (IC) may not have fully taken them into account when planning and managing the resolution of such incidents. The revised LFB risk assessment and draft policy requires ICs to implement new and additional control measures at high rise incidents.
21. A key impact of this is that additional resources are likely to be required to implement some or all of these additional measures in the early stages of an incident, such as the use of a fire fighter in a stairwell to monitor internal smoke spread or the need to use alternative means to move water or equipment to upper floors in the event fixed firefighting facilities such as lifts or risers are unavailable for any reason.
22. GRA 3.2 and the revised LFB risk assessment and policy recognise that, where a fire occurs at such a height or position that external firefighting/rescue is unlikely to be possible and/or effective, there will be a need to implement high rise procedure.
23. The current PDA of three pumping appliances was selected to support implementation of the previous GRA, the LFB risk assessment and high rise policy. These documents were completed and published some time ago, before the incidents which are referred to above, and were based upon the explicit statement of fewer hazards and control measures than are now recognised and articulated in current documents.

24. In this context, and noting that any combination of these factors may lead to more dynamic and complex incidents, this report recommends that four pumping appliances are initially sent to fires in buildings that require the implementation of high rise procedure.
25. This will support the IC to fully implement a safe system of work at the earliest opportunity and to deal more effectively with the full range of scenarios that are reasonably foreseeable.
26. Examples of such scenarios include but are not limited to:
 - Difficulty in gaining access to high rise building. This may slow response and require additional resources to effect entry or transport equipment
 - Unavailability or poor water supply. This will require additional resources and equipment to identify and establish a suitable water supply, especially on occasions when this is required on upper floors
 - Unavailability of dry rising main. This will require additional equipment and personnel to supply water to scene of operations using an aerial appliance, hose hauled aloft or use of intermediate pumps
 - Unavailability of firefighting lift. This will require additional personnel to move equipment, establish a bridgehead and rescue casualties via internal staircases.

27. This report proposes the following two options to ensure sufficient resources are mobilised to high rise incidents:

Maintain the current PDA and mobilising protocols for high rise fires and continue to facilitate the need for additional resources through current make-up protocols. This option has no additional impact on appliance movements.

To have a PDA of four pumping appliances for all fires in known high rise buildings (LFB incident type code A1HR – known high rise buildings or identified during call).

Evaluation

Sustainable development implications

31. A sustainability impact assessment has been conducted and no significant implications have been identified.

Equalities implications

32. An equalities impact assessment has been conducted and no significant implications have been identified.

Consultation

Name / Role	Method consulted
DORT Reason Operational Directorate's Co-ordination Board	Circulation of draft policy & meetings Presented and agreed 03/09/12 and 14/10/13
Sue Budden (Director)	Circulation of draft policy
Heads of Service	Circulation of draft policy
Head of Service Peter Cowup	Circulation of draft policy & meetings
DAC Hughes	Circulation of draft policy & meetings
DACs	Circulation of draft policy
GM A'Court	Circulation of draft policy & meetings
GM Churchill	Circulation of draft policy & meetings
GM Drawbridge	Circulation of draft policy & meetings
Gary Hopkins (FRS E)	Circulation of draft policy & meetings
SM Utting	Circulation of draft policy & meetings
SM Morton	Circulation of draft policy & meetings
SM Goodall	Circulation of draft policy & meetings
SM Jason Jones	Circulation of draft policy & meetings
Operational sounding board	Circulation of draft policy
David Wyatt	Circulation of draft report

Note on high rise mobilisation data

- The property is a building (dwelling, residential, non-residential)
- There is an A1 ITC code and no A10 ITC code
- The property is deemed to be of high rise height because
 - it has an ITC of A1HR², or
 - it is 6 floors or higher in IMS, or
 - high rise building equipment is present (e.g. Firefighter lift) in IMS, or
 - Applicable property type classification in IMS
- The building is not derelict.

- *None* – no firefighting required on arrival
- *Small* – minimal firefighting required; extinguished by physical means (e.g., stamping, smothering or immersing in water) or a portable extinguisher.
- *Medium* – These fires required the use of the hose reel attached to a fire engine
- *Large* – These fires required the use of a main jet supplied from a fire hydrant
- *5+ fire engines* – These are large fires, attended by five or more fire engines.

² There are a small proportion of incidents/mobilisations in the dataset which are not high rise although the A1HR ITC was used at time of mobilisation.