



HM Fire Service Inspectorate

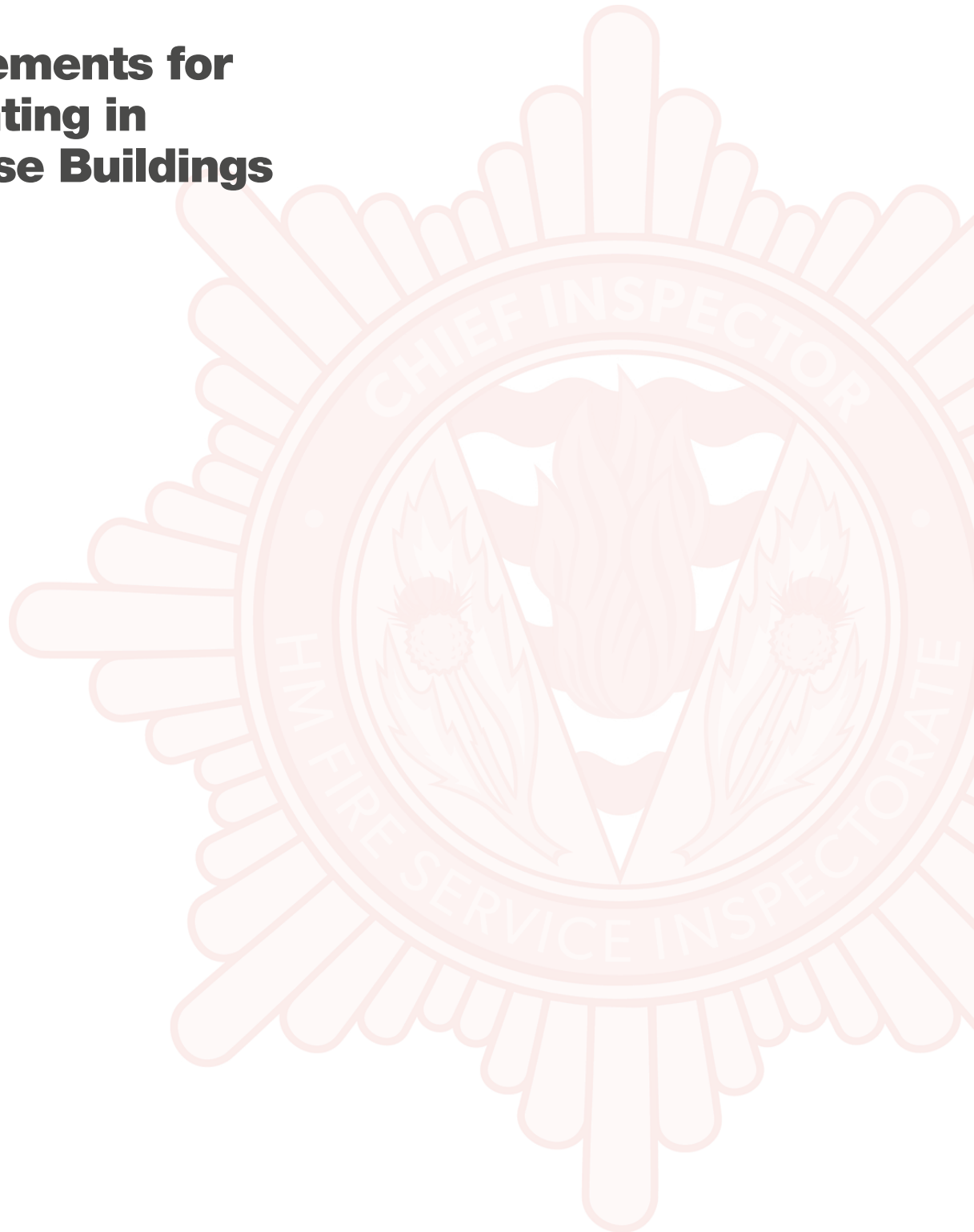
Arrangements for Firefighting in High Rise Buildings



Integrity, Objectivity, and Fairness.

HM Fire Service Inspectorate

Arrangements for Firefighting in High Rise Buildings



Integrity, Objectivity, and Fairness.

Acknowledgements

We are grateful to all those persons that we engaged with during the course of our inspection and who provided us with information and contributed constructively to interviews and during fieldwork.

Laid before the Scottish Parliament by HM Chief Inspector of the Scottish Fire and Rescue Service under section 43C(5) of the Fire (Scotland) Act 2005

September 2022 SG/2022/161

To Contact Us

Telephone +44 (0) 131 244 3275

Email HMFSI@gov.scot

Website www.gov.scot/fireinspectorate

Contents

| | |
|--|-----------|
| INTRODUCTION | 03 |
| SUMMARY | 04 |
| RISKS ASSOCIATED WITH HIGH RISE BUILDINGS | 05 |
| FIRE SAFETY IN HIGH RISE BUILDINGS | 07 |
| Domestic | 07 |
| Lifts | 08 |
| Fire warning systems | 08 |
| Community safety activity | 10 |
| NON-DOMESTIC | 10 |
| FAMILIARISATION AND RISK INFORMATION | 11 |
| Information displayed | 11 |
| Familiarisation (see also Building Inspections) | 13 |
| Risk information | 13 |
| Operational Intelligence (OI) by mobile data | 13 |
| Other record keeping | 15 |
| BUILDING INSPECTIONS | 17 |
| Domestic buildings | 17 |
| Non-domestic buildings | 19 |
| Fire safety audit visits | 19 |
| Operational Intelligence visits | 19 |
| OPERATIONAL PROCEDURES | 20 |
| Standard Operating Procedure (SOP) | 20 |
| Comment on the SOP document | 20 |
| Comment on procedures in the SFRS SOP | 22 |
| How the SOP guidance is interpreted and implemented | 24 |
| Accessing information while en-route or on arrival at an incident | 25 |
| Alteration to procedures | 25 |
| Carrying equipment to an upper floor | 26 |
| Comparison with firefighting guidance elsewhere | 28 |
| Cabling issues | 28 |
| TRAINING AND EXERCISING | 30 |
| ACTION ON ISSUES | 32 |

| | |
|--|-----------|
| FURTHER DEVELOPMENTS | 33 |
| New appliances | 33 |
| Radio systems | 33 |
| National engagement | 34 |
| Building Evacuation | 34 |
| Fire survival guidance | 35 |
| Smoke curtains | 35 |
| Smoke hoods | 35 |
| Conclusion | 35 |
| List of Recommendations | 36 |
| Glossary | 38 |
| Appendix A | 39 |
| About HM Fire Service Inspectorate in Scotland (HMFSI) | 39 |
| Appendix B | 40 |
| How this inspection was carried out | 40 |
| Methodology | 41 |
| Appendix C | 42 |
| Recommendations for FRSs extracted from GTI Phase 1 Report Chapter 33 | 42 |

INTRODUCTION

1. Significant fires in high rise buildings are relatively infrequent; however, due to the construction of these buildings, firefighting can offer particular challenges to the Fire and Rescue Service (FRS). These challenges may include issues involving access, communications, incident command, and potential fire and smoke spread. Preplanning is important. Firefighters need to have a level of knowledge and training in high rise firefighting techniques; and the FRS needs to have suitable equipment, and information and checking systems to reinforce its preplanning.
2. This report is the outcome of an inspection by HM Fire Service Inspectorate (HMFSI) into the Scottish Fire and Rescue Service's (SFRS's) arrangements for firefighting in high rise buildings. For the purpose of this inspection, we have followed the definition of a high rise building used by the SFRS in its operating procedure, being buildings in excess of 18 metres above ground level or having five or more floors.
3. Appendix A contains information about HMFSI, while appendix B contains information on how the inspection was undertaken. This inspection has looked beyond firefighting since firefighting is interdependent on other features and other aspects of FRS work.
4. The recommendations and comments we have made in the report address some strategic level issues and also some issues concerning detail and practice.
5. There is a general trend towards the use of the term 'tall building' rather than high rise. High rise can be interpreted as only applying to domestic buildings. We have maintained the use of the term 'high rise' within our report for consistency, and we use the term generically to apply to both domestic and non-domestic buildings.
6. The devastating fire at Grenfell Tower in London in 2017 resulted in the tragic loss of 72 lives and is the subject of an inquiry under the Inquiries Act 2005. The Grenfell tragedy demonstrated an extreme fire and risk. The report of Phase 1 of the Inquiry into the fire contained recommendations, some of which are directed at London Fire Brigade and some to FRSs generally. The Inquiry's recommendations relative to FRSs are listed in appendix C. The outcome of the fire and the recommendations of the Inquiry were naturally in the mind of our inspection team while undertaking our inspection.

SUMMARY

7. The SFRS has existing, and in some respect, long standing arrangements for incident command and firefighting at high rise buildings.
8. The tragic fire at Grenfell Tower and the recommendations of the Grenfell Inquiry has impacted on the SFRS and on the Scottish Government. The SFRS has been a constructive and contributory member in the partnership response in considering issues in Scotland.
9. In response to ongoing developments, there is a risk that the SFRS gets drawn into arrangements that in part may reflect legislation and risk profiles elsewhere in the UK, and that may not be relevant, or wholly appropriate for Scotland. Some of the issues we mention in the report which involve development or research have been impacted by the Covid-19 pandemic restrictions.
10. While we think that the SFRS has scope to improve performance and consistency and we have made some recommendations, our overall impression of the SFRS regarding firefighting in high rise buildings is principally positive. This acknowledges that the Service is working to progress certain workstreams still in development.

RISKS ASSOCIATED WITH HIGH RISE BUILDINGS

11. In addition to the fire at Grenfell Tower, there have been other serious and challenging domestic high rise incidents in the UK, albeit on a different scale to the Grenfell Tower fire. Firefighters have lost their lives and been injured in high rise fires in the UK.
12. When considering firefighting in high rise buildings, one needs to be mindful of the profile of these buildings in Scotland. One aspect that can affect the firefighting effort required is the height of a building. Scotland does not have the extra-high buildings found elsewhere. Many of the previous domestic blocks with around 20 floors have been demolished.
13. High rise buildings in Scotland are mostly located in the cities and in the towns of the central belt. There are around 770 high rise domestic blocks (private and social housing) in Scotland. There are also high rise buildings which are put to other residential and commercial purposes.
14. The approach taken in Scottish building standards is that high levels of fire separation and containment are imposed within a building containing flats and maisonettes. It is unusual for there to be a need to evacuate the fire floor or the entire building in the event of a fire. The level of fire separation is such that, other than in the flat of fire origin, residents normally remain within their own flat or maisonette. This is termed the 'stay put' approach.
15. However, circumstances may arise in which firefighters consider it necessary to evacuate residents from a number of other flats and, on rare occasions, the entire building. Of course, the potential for fire spread on or within the external wall cladding system, as was so tragically evidenced at Grenfell Tower, must also be considered.
16. There are also some heritage buildings in Scotland which may fall within the high rise definition, but were built long before the high rise fire safety standards described in this report were introduced.
17. Following the Grenfell Tower fire, the Scottish Government set about gathering information and created an inventory of domestic high rise buildings in Scotland which includes construction information. This exercise identified the existence of certain cladding materials and assisted an overall assessment of relative risk. Subjectively, the scale of remediation issues which were experienced in England during the post-Grenfell period, has not been required in Scotland.
18. In high rise domestic blocks in Scotland it is uncommon for a fire to spread beyond the floor of origin. The level of risk in high rise buildings in Scotland is influenced by the existing housing stock and construction standards. Notably, a fire in Garnock Court, Irvine in 1999 spread vertically externally as a result of construction materials. This incident influenced subsequent construction standards.
19. Nevertheless, the Scottish Government has contracted the Building Research Establishment to examine and report on present levels of risk.

20. There are other aspects of research and standards into fire safety and external wall standards and performance. While these are important and subject to ongoing development, they are largely outwith the direct control of the SFRS and we have not specifically examined these issues during our inspection. This includes a single building assessment process¹ which is being introduced in Scotland. It is possible that this process might result in extensive remediation works over the next decade or so. This could have implications for the SFRS for site preplanning. The Service has existing arrangements for engagement and information exchange as part of the single building assessment process and we urge the Service to remain vigilant and adapt as necessary.



Figure 1: High rise offices in Glasgow
Source: HMFSI

1

Detail available at <https://www.gov.scot/policies/building-standards/single-building-assessment/>

FIRE SAFETY IN HIGH RISE BUILDINGS

Domestic

21. High rise² domestic buildings in Scotland have fire protection and firefighting features which assist and influence the way that the SFRS fights fires in these buildings. Requirements are imposed by building regulations and these have changed over time. Buildings may have features that reflect their age of construction and whether any upgrading has been carried out.
22. Fire safety measures within high rise domestic blocks may include the following:
 - fire-resisting construction between adjoining dwellings and between dwellings and common parts (fire separation) and protecting escape routes
 - lift wells enclosed by separating walls with fire resistance
 - elements of structure capable of supporting and retaining the fire protection to floors and escape routes
 - a firefighting shaft within a fire-resisting enclosing structure, the shaft comprising a firefighting stair, firefighting lobbies, rising main and a firefighting lift:
 - a firefighting stair assists firefighters to access the fire and if necessary escape from the fire in relative safety. The firefighting stair is at least 1m wide (a firefighting stair can also be used as an escape stair)
 - a firefighting lift³ allows firefighters to travel and transport equipment; the lift control and communication system is capable of being controlled by the FRS
 - a firefighting lobby provided between the firefighting stair and the flats on each level allowing firefighters sufficient room to lay out hose and connect hose to the riser outlet
 - a rising main (wet or (dry): this is a pipe installed in a building which is, or can be, charged with water and provides firefighters with a fixed means of providing water for firefighting on upper floors; riser outlets possibly located in a protected lobby, protected corridor or open access balcony, depending on the age and design of the building
 - smoke ventilation arrangements in escape stairs, firefighting stairs, protected lobbies, firefighting lobbies and protected corridors. The smoke ventilators are capable of being opened, closed or shut off by the FRS. The ventilators are actuated automatically by means of smoke detectors in the common space
 - an evacuation alert system (EAS)⁴ for use by the FRS which would enable the FRS to initiate operation of evacuation alert sounders within each dwelling on any single floor, multiple floors and the entire building

2 The SFRS uses a height description for high rise that doesn't exactly match that used in building regulations and in fire safety guidance: we mention this for interest and don't see any implications coming from this.

3 We use the term 'firefighting lift' generically: the technical requirements and the terminology applied to lifts for the use of firefighters has changed over the years and different standards will be in place.

4 This facility first featured as mandatory in 2021.

- storey and dwelling numbering to allow firefighters to orientate themselves within the building.
- 23. Where there is fire-resisting construction to internal walls, this should include self-closing fire doors with the same fire resistance duration as the wall.
- 24. Since 2005, the provision of an automatic fire suppression system is a requirement of building regulations for relevant new work within the building standard high rise criteria.
- 25. In some older blocks, an automatic sprinkler system has been installed within the bin store space.

Lifts

- 26. From a firefighters' perspective, the standard of lift changed in 1986 when lift design was altered to enhance firefighter safety, though there was a lag before these measures became mandatory under building regulations. One of the improved lift features is a facility, whereby, in order to fully open the lift doors, firefighters must maintain pressure on the door control until such time as the door is fully open. If pressure is released before the doors fully open, the travel of the doors is reversed.
- 27. This type of door system is incorporated for the safety of firefighters, by enabling them to be protected by the lift doors, simply by removal of the sustained pressure on the door control if, for example, firefighters are faced with a fire or smoke as the lift doors begin to open.
- 28. The SFRS is a joint sponsor for the development of a guide by a leading fire safety consultant. The guide will explain the different lift standards which are relevant to the use of lifts by firefighters. There is good information on these lift standards in the SFRS's PowerPoint training presentation for the Operational Assurance Visit (OAV).

Fire warning systems

- 29. In blocks of flats, it is normal for there to be a self-contained smoke alarm system in each flat designed to alert the flat occupants. During the course of our inspection, legislation was introduced in Scotland to require a separate system of interlinked smoke and heat alarms in each dwelling. While this legislation is in place, compliance levels in domestic high rise buildings are unknown.
- 30. During our inspection fieldwork we came across some domestic high rise buildings operated by social housing providers that had a 'stay put' arrangement in place, but had been fitted with a fire warning system in the communal areas. These fire warning systems comprise automatic fire detectors and sounders.
- 31. Some of these systems have been installed after the Grenfell Tower fire and at a time when new Scottish Government guidance on fire safety in high rise domestic buildings was available as a draft document for public comment. In 2020, after that public consultation, the Scottish Government issued the fire safety guidance⁵ which is relevant to domestic high rise buildings. (the guidance was further revised in 2022). Within the guidance there is a statement "*Rarely will a communal fire detection and alarm system be appropriate for a high rise domestic building*".

⁵ Practical Fire Safety Guidance for Existing High Rise Domestic Buildings; Scottish Government

32. We believe that this general statement in the Scottish Government guidance regarding communal fire warning systems is sensible and consistent with the guidance in British Standard 9991:2015⁶ and the technical handbook for the Scottish Building Regulations. Guidance in other British Standards also advises that communal fire warning systems are not appropriate for buildings with a ‘stay put’ arrangement.
33. In the event of a fire occurring in the common areas, the actuation of sounders might cause residents to leave the comparative safety of their flats and venture into a hazardous environment. The anecdotal evidence in Scotland is that within these buildings in the early post-installation period, it was commonplace for some residents to vacate their flats when the common area fire warning system actuated, but that this practice by residents had reduced with the passage of time.
34. An advantage that we have noted where there is a communal fire warning system, is that there can be an early call to the SFRS. And where the housing provider operates an on-call concierge system, then concierge attendance can be prompt and this can assist the SFRS crews in attendance.
35. The use of evacuation alert systems (as described in para 22) in high rise domestic blocks is now mandatory for new buildings in Scotland, though there are few new-build high rise domestic buildings⁷ constructed each year in Scotland and we did not identify any evacuation alert systems in place⁸.
36. The Scottish Government fire safety guidance anticipates that housing providers will assess the fire risk in their buildings and it seems obvious that retrofitting an evacuation system is something that might be considered as part of the assessment. Having a communal fire warning system with sounders could be a barrier to retrofitting an evacuation system due to resident uncertainty of response where there are multiple systems in place.
37. Fire station crews inspect domestic high rise blocks regularly. The inspection guidance (which we consider later in this report) contains no guidance on what to do where there is a communal fire warning system installed, though the SFRS training material does make reference to fire alarm systems.
38. The Service’s fire safety policy for domestic high rise would benefit from some further development in line with recommendation number 1.

6 BS 9991:2015 *Fire safety in the design, management and use of residential buildings – Code of practice*

7 *High rise* as defined in Scottish Building Regulations.

8 The SFRS has subsequently advised that there are a small number of sites where EAS systems are fitted or are to be fitted.

Recommendation No. 1

The provision of fire safety measures in domestic high rise buildings is of course the responsibility of building owners and others in control of buildings. However retrofitted fire systems may result in implications for the SFRS.

We recommend that the SFRS firms up its policies and internal guidance on fire safety standards in high rise domestic buildings with a view to influencing a standard risk-based approach in the provision of:

- a. fire warning systems, and
- b. SFRS controlled evacuation systems.

This should take into account the suitability of these systems and potential problems and interactions.

Community safety activity

39. The SFRS is proactive in its approach to community safety delivery visits and advice. The Service embarked on fire safety reassurance campaigns after the Grenfell Tower fire in partnership, including leaflet campaign activity. We also saw evidence of ongoing advice being delivered to residents of high rise blocks.

NON-DOMESTIC

40. Fire safety arrangements in non-domestic high rise buildings are similar to those in domestic buildings. There may be compartmentation, and fire separation if multi-occupied, and with evacuation arrangements that will be specific to the premises. Evacuation might be simultaneous, phased or otherwise staged.



Figure 2: Small domestic high rise building
Source: HMFSI

FAMILIARISATION AND RISK INFORMATION

41. Information on building layout, active and passive fire systems, and the ability of residents to self-evacuate, may assist the SFRS in dealing with an incident.
42. Section 9 of the Fire (Scotland) Act 2005 (the 2005 Act) imposes a duty on the SFRS to make arrangements for obtaining information required for the purpose of extinguishing fires and protecting life and property. And section 27 provides power for authorised SFRS employees to gather this information.

Information displayed

43. Some domestic high rise buildings are fitted with on-site external indicator plates. Figures 3 and 4 show this type of indicator plate sited on the exterior of buildings. Indicator plates contain information on physical features of the building and firefighting facilities. This information provides firefighting crews in attendance with important detail in relation to the layout of the building and can influence the firefighting techniques employed.
44. The provision of indicator plates in Scotland initially occurred in the Strathclyde Fire Brigade area. After the formation of the SFRS in 2013 the plate was adopted as a standard by the new service. During our fieldwork, indicator plates are still in the process of being introduced in some parts of the country.
45. We approached this inspection with the inductive approach that mobile data was a more important aspect of risk information, but we have concluded that mobile data and indicator plates serve a separate but related purpose and we see the strong benefit for external marking. The feedback that we received from fire station-based personnel is that the external indicator plate is an extremely useful reference facility which can be easily and quickly consulted.



Figure 3: High rise external indicator plate in place
Source: HMFSI

46. In some areas where indicator plates were not used in legacy Service areas, they have been purchased by the SFRS and provided to building owners to fit. There is a mixed picture in private sector blocks: in some areas there are no plates on private sector blocks. In some cases, there has been reluctance by private sector owners to fit plates.
47. We think that the responsibility to mark domestic high rise buildings should be a duty imposed on building owners, similar to the duty already imposed to maintain fixed firefighting equipment and facilities. There may also be scope to expand the marking system to non-domestic buildings.



Figure 4: Indicator plate in place on the block shown in figure 2
Source: HMFSI

Recommendation No. 2

We believe that it would improve safety if the external indicator plate used on domestic high rise buildings was adopted as a standard in Scotland and a mandatory requirement to install and maintain these plates was imposed on building owners.

We recommend that, if the SFRS shares our view, then the SFRS should work with Scottish Ministers to influence such a change to introduce a statutory duty (perhaps achievable by amending the Fire Safety (Scotland) Regulations 2006).

(This recommendation, albeit somewhat indirect, is made to the SFRS given that the statutory power of HMFSI facilitates the making of recommendations only to the SFRS).

48. In addition to external markings, those domestic buildings with wet risers have specific data sheets fitted by the Service within the riser inlet cabinet. This is useful information regarding operation of the system and particularly for crews who might not be otherwise familiar with the system or building.
49. Non-domestic high rise buildings containing fire engineering or complex arrangements may have diagrams, plans or instructions displayed internally. This provision might be ad-hoc and will not necessarily relate to the fact that a building is high rise.

Familiarisation (see also Building Inspections)

50. The Service's Standard Operating Procedure (SOP) for firefighting in high rise buildings⁹ (which we consider later in this report) includes information on familiarisation and visits to high rise buildings. There is reference to the following.
- Personnel should be familiar with high rise risks within the fire station area and neighbouring areas with regular visits for gathering and review of operational intelligence (OI)
 - Quarterly inspection of multi-storey flats partly for familiarisation
 - Periodic familiarisation visits to high rise buildings containing flats, which have features that may be unfamiliar to crews
 - In relation to ventilation, carry out site specific visits to high rise buildings in the fire station area, as part of a training programme
 - Regular visits and OI gathering are essential
 - Imperative that site exercises are carried out
 - Quarterly inspection schedule determined by Fire Safety Enforcement Officer (FSEO)
 - Stations that have no high rise premises will undertake crossover visits to high rise buildings for which they are included on the first attendance.
51. The existence of this information sits awkwardly in the SOP when there are already separate documents covering familiarisation, visits and training, and there is overlap and potential for contradiction. We think that the SOP should contain only operational procedures and that other content about familiarisation and visits should be removed and dealt with in the existing documents that already cover these subjects. Our experience is that the familiarisation requirements contained in the SOP are inconsistently applied. (We have an overall recommendation relating to the SOP later in the report).

Risk information

Operational Intelligence (OI) by mobile data

52. The SFRS has a standard procedure for OI. This includes gathering information, holding information for future reference and familiarisation visits by crews. The method of accessing information is by the use of mobile data using dedicated hand held tablets carried on each fire appliance or otherwise available. The OI system is used for holding site-specific information and for generic guidance.
53. This system is used by the SFRS for the provision of information on high rise buildings. In a few instances we noted that information is additionally carried as a laminated sheet in some SFRS fire appliance cabs.

⁹ SFRS, *Standard Operating Procedures – High Rise Buildings*; version 2; July 2020

54. There are two factors that we think are relevant. Firstly, this is not a new duty: gathering information on premises is a long standing duty on the Fire and Rescue Service so there could be an expectation that there will be legacy records available. Secondly, the SFRS OI procedure was introduced in 2018 as a new system with an associated workload, and implementation has been interrupted by Covid-19 restrictions.
55. The Grenfell Tower Inquiry (GTI) Phase 1 report¹⁰ contained recommendations on the storage and access to electronic plans.
56. HMFSI carried out a thematic inspection on operational risk information in 2018 and subsequently issued a report¹¹ containing a number of recommendations for the SFRS.
57. The SFRS OI system is contained in a number of different documents. The OI framework document identifies the types of record that might be held in terms of graphics and contains an inspection frequency based on risk level. Frequency of visit is 1/2/3 or 5-yearly. However an OI record is mandatory for 'high rises'. We think the use of the generic term 'high rises' in the document lacks some definition.
58. One of the graphics categories in the OI framework is called a 'Fire Service Response Plan' (FSRP) – this is a 3-dimensional image of premises and is standard for premises within an OI inspection programme.
59. Given that the SFRS standard is for OI to be recorded for all 'high rises', coupled with the focus on high rise information which followed the Grenfell Inquiry report, we were surprised to find that the SFRS does not have all the domestic high rise buildings recorded on its OI system. There are different interpretations in place. Our experience is of course a sampling exercise, but there is an inconsistency and differences between Local Senior Officer (LSO) areas. Some areas have no information recorded, others have good information, and in one case the information is available, but not on the OI system.
60. We examined some of the risk information recorded on the OI system for a number of domestic and non-domestic high rise buildings at each LSO area that we visited, where they were available:
 - the records commonly comprise two dimensional layout plans and associated information
 - a small number of layout representations are difficult to understand and are suited to interpretation by persons with an existing awareness of building layout
 - some OI records are well structured and contained good information
 - some records contain legacy TIPs (Tactical Incident Plans).

¹⁰ [Phase 1 report Grenfell Tower Inquiry](#)

¹¹ HMFSI; *The Scottish Fire and Rescue Service's arrangements for the provision of Operational Risk Information*, 2019

61. We are impressed by the records available in one LSO area (a city with a challenging portfolio of property types) and the work that was underway there to develop and record suitable OI records. However the provision of OI records on the tablet device is inconsistently applied throughout the Service.
62. Generally, fire station-based personnel have a good level of knowledge of local domestic high rise buildings as a consequence of the visit frequency and there is less importance placed locally on the information available on OI records. In practice, the usefulness of OI information may be greater to incident commanders and attending crews that are unfamiliar with the building.
63. Where there is information regarding cladding systems, this can be recorded on the OI system and we saw examples where this type of information was in place. The Service has placed the information on cladding systems available from the Scottish Government's high rise inventory, onto the emergency notes page¹² of relevant OI records.
64. Where the SOP cannot be followed at a particular domestic high rise building, a summary of the variation has been placed on the emergency notes page of relevant records.

Recommendation No. 3

The SFRS should review its expectation regarding the recording and use of OI for high rise buildings and take steps to implement a standard approach.

Other record keeping

65. The GTI Phase 1 report contains recommendations related to the provision of an external Premises Information Box (PIB) containing relevant information on the building and occupants.
66. In Scotland there has not been a strong tradition on the use of PIBs. There are other requirements and recommendations to provide plans contained in legislation and guidance such as:
 - the requirement for underground railway stations to have an accessible plan
 - the recommendations in British Standards for layout and similar information for large or complex or underground buildings
 - the display of zone plans in buildings with fire warning systems.
67. We came across situations where housing authorities in Scotland are considering whether PIBs should be located on their housing blocks. And the Service's guidance for OAVs includes checking any plans and information in a PIB (if available).
68. The provision of paper plans could in some ways be seen as a low-tech approach, when every SFRS fire appliance in Scotland is equipped with a tablet to hold mobile data. Of course paper plans could be seen as a back-up arrangement in the event of equipment failure.

¹² Each OI record can have an emergency notes page which automatically displays when the record is accessed.

69. One of the more difficult aspects of the GTI recommendation is for owners and managers of high rise residential buildings to provide Personal Emergency Evacuation Plans (PEEPs) for occupants with reduced mobility.
70. It is difficult to see how a system of PEEP's could be effectively put in place, resourced, and maintained accurately due to the number of practical difficulties involved in domestic blocks.
71. A PEEP is a formal process normally applied in respect of non-domestic premises where a person's assistance needs are assessed and arrangements put in place, often by an employer. However the situation in a domestic environment is different. In most domestic settings there is no assistance immediately available. The equivalent of a PEEP in a domestic situation has been described as producing a 'rescue plan' rather than an 'evacuation plan'.
72. While this recommendation was not directed at the FRS, a PEEP scheme could have major issues for the SFRS. If this type of information was available, how would it be accessed and used by the SFRS? Traditionally, the SFRS has held information on personal risk factors such as where there is a hoarding risk or medical oxygen is in use; when it becomes aware of these, the information would be available to the incident commander at a fire.
73. The UK Government issued a consultation on the provision of PEEP's in high rise buildings and it has been a complex and controversial issue. In June 2022 subsequent consultation was issued under the description 'Emergency Evacuation Information Sharing'.
74. The SFRS is a joint contributor to research work being undertaken by a contractor which may impact on high rise. This is a project examining the potential for a technological recording system for recognising whether persons who have previously been identified as in need of assistance, are present in a domestic building. The proposal is to use time and presence technology to display on a screen, accessible only to the fire and rescue service, information on whether these residents had left the building or are still within the block. The contractor is hoping to carry out trials of the system in some existing buildings.

Recommendation No. 4

The SFRS should develop its own policy on the suitability of 'Premises Information Boxes' for high rise domestic blocks so that a standard approach can be taken where housing providers may propose to introduce these boxes for their buildings

BUILDING INSPECTIONS

Domestic buildings

75. The SFRS has a quarterly inspection programme¹³ for high rise domestic buildings termed an OAV and the purpose of the inspection is twofold:
 - to give personnel familiarisation, and
 - to check dutyholder compliance with fire safety.
76. The 2005 Act provides that dutyholders (principally owners in the case of domestic buildings) require to maintain their premises and any facilities, equipment and devices provided in respect of the premises for the use by or protection of firefighters.
77. The procedure for visiting domestic high rise buildings for quarterly inspections is detailed in a SFRS document 'Operational Assurance Visit Procedure for Multi-storey Flats'.
78. The procedural document is complemented by a component of the SFRS training programme on OAV. This training component is a 64-slide PowerPoint presentation on the training for operational competence (TfOC) programme incorporating some photographs and videos. The training component is to a very good standard.
79. The OAV procedural document content refers to obtaining information and checking compliance. It references the SOP as the requirement for an OAV. There is a quarterly visit frequency with annual validation, and explanation of the legal background, a standard checklist, examples of defects and outcome-dependent standard letters.
80. The Service also uses a similar term Operational Reassurance Visit (ORV) to describe a different type of visit to different premises types. The terms OAV and ORV are at times confused by SFRS personnel.
81. During our fieldwork visits, we found that domestic high rise inspections are scheduled and monitored in line with the standard procedure for the quarterly inspections. Fire station-based personnel follow this procedure diligently – to the extent of their knowledge. We saw this at first hand while accompanying crews on their visits. Scheduling and monitoring is generally good.
82. The inspection is normally undertaken by a single pump crew, though we did find one location where the inspection is undertaken by the same single RDS crew member. In the latter situation an annual crew familiarisation visit is undertaken. And in one RDS-crewed fire station we visited, the OAV is undertaken by a whole-time crew from a nearby fire station.
83. The frequency of visits means that local crews are likely to have an awareness of the layout and features of domestic high rise buildings in their station area due to attendance at previous visits.

¹³ The SFRS's OAV programme was temporarily interrupted by Covid-19 restrictions.

Good Practice

The approach in one city is that OAV inspections are scheduled on a city-wide basis rather than fire station area. This allows greater crew familiarity and it works well at that location.

There may be scope to adopt a similar approach in other areas.

84. The involvement of FSEOs in the OAV scheduling and processing varies, depending on local practice. In some cases FSE staff vet the completed inspection reports while in other areas, reports are issued without FSEO involvement. We received mixed views about local processes and whether the involvement of FSEOs was a good use of resources. Regardless of local practice, there was good local liaison.
85. In one city, FSEOs have an annual accompaniment of a crew during one of the OAVs for each building on the programme. This works well and offers good information exchange and liaison, but is not necessarily transferable to other areas due to the level of resources, workload constraints, and the number of buildings on the inspection programme.
86. Some fire station areas have a large number of domestic high rise buildings and consequently personnel based there have a relatively high workload in relation to the inspection of those buildings. In one location this was described to us as impinging on the time available for firefighters to maintain specialist training.
87. We found that generally fire station personnel have a good level of knowledge of the layout and most features of domestic high rise domestic buildings in their area. The Service also has a means of communicating issues and learning that arise from fires and inspection work and we saw evidence of this in respect of fire spread and compartmentation issues for high rise buildings.
88. The high rise SOP suggests that LSOs have discretion regarding which buildings should be included in the high rise flats inspection programme, though there is separate guidance regarding OI and OAV. A proposal to introduce a risk-based approach which would have led to a reduced inspection frequency for some low risk private sector buildings in one LSO area did not progress.
89. It is understandable that the SFRS would not wish to reduce¹⁴ the OAV frequency in the post-Grenfell period when there was uncertainty regarding constructional issues and until the learning from the GTI was available. The SFRS now has an improved awareness of risk and learning.

Recommendation No. 5

The SFRS should reconsider the introduction of a risk-based OAV inspection frequency, in line with what exists for fire safety audits and OI inspections generally, where appropriate.

¹⁴ That said, Covid-19 restrictions did cause OAVs to be suspended for a period

Non-domestic buildings

90. There are two ways that SFRS personnel may inspect non-domestic high rise buildings:
- if the building is on the SFRS fire safety audit programme, it will be visited by SFRS enforcement staff to carry out an audit of compliance with fire safety law
 - if the building is on the OI schedule, it will be visited by fire station-based staff for the purpose of information gathering and familiarisation.

Fire safety audit visits

91. Fire safety audits are carried out on a risk-based frequency which can be from annual up to once every five years. But where a building is not on the audit programme, it will not be visited unless a specific need arises. This risk-based frequency is principally determined by the use of the premises and the degree of assessed risk to the building occupants.
92. Part of the fire safety audit process involves checking whether firefighting facilities are being maintained. However the potential risk to firefighters is generally not a factor which influences the assessment of risk for inspection scheduling.
93. Office buildings are generally considered to have a relatively low risk in terms of fire safety and consequently high rise office buildings will be unlikely to feature in an audit programme. On the other hand, non-domestic residential buildings have a higher perceived level of risk and will likely have a scheduled audit visit frequency.

Operational Intelligence visits

94. SFRS policy is for visits for OI purposes to be carried out in line with policy documents. These specify a visit frequency in terms of risk.
95. The familiarity that crews may have regarding domestic high rise buildings, is not matched in non-domestic high rise buildings due to some high rise buildings not being on the OI inspection schedule, and therefore not subject to OI visits. And for those that are on the OI visit schedule, there is a less frequent visit requirement than for high rise domestic buildings.
96. Some non-domestic high rise buildings have fire safety features and systems that are unique and 'fire-engineered'. It is useful for the SFRS to hold information about the provision and functioning of such features and systems. We identified that the SFRS does not hold OI information for all fire-engineered high rise buildings.

OPERATIONAL PROCEDURES

97. Firefighting in high rise buildings can be resource-intensive and physically demanding. To facilitate this, the SFRS sends more fire appliances to reports of fire in mainland high rise domestic buildings, than would normally attend at other reported dwelling fires.
98. The SFRS uses a system of SOPs which contain procedures for dealing with different types of incident or scenario. The SFRS procedure for firefighting in high rise buildings is contained in a SOP. We considered two aspects of the high rise SOP:
 - suitability of the document, and
 - suitability of the procedures contained within the SOP
99. There are some Ministry of Defence (MOD) operated high rise buildings which would require a different approach from the SFRS and a need for the Service to have specific liaison, engagement and preplanning with the MOD FRS. While we mention this for background, we did not explore these arrangements in our inspection.
100. There is also at least one high rise domestic building on an island and for which, parts of the SOP will not necessarily apply to. In such situations a local solution, or an adaptation to the SOP based on the specific circumstances, is appropriate.

Standard Operating Procedure (SOP)

Comment on the SOP document

101. The SFRS has acknowledged the need to amend or change its procedural documents, including SOPs. One of the challenges with written procedures is that firefighters can be swamped by the length of documents and breadth of information contained within. The Service has commenced a Document Conversion Programme and in 2021 carried out a staff survey to obtain feedback on existing documents. Consequently the high rise SOP is subject to revision by the Service to streamline the document. We examined the existing high rise SOP since it was the version in force at the time of drafting this report. We are mindful however that the Service may already have some of the content issues we mention below in hand.
102. The feedback we received at fire stations regarding the SOP referenced the suitability of the document and comment on the procedures that the document imposes. The feedback regarding the document was predominantly in line with our view that the document is over-lengthy and would benefit from a different structure.
103. The suggestions that were made to us for improvement included reducing the size of the document and structuring the document into a 'need to know'/'nice to know' split.
104. The SOP contains procedures for different scenarios in a high rise building. The procedures include:
 - a standard building firefighting procedure for a fire within the lower floors of a high rise building

- a standard high rise firefighting procedure and guidance for a fire on an upper floor
 - a predetermined modified firefighting procedure for a fire on an upper floor in a building where it is known that the standard procedure cannot be applied and a unique, site-specific procedure, is then established
 - an investigation procedure where no firefighting is anticipated
 - a procedure for fires in chutes and lift rooms.
105. We think that there is scope for the document to be amended to improve consistency in the extent to which the procedures are offering an incident commander guidance or whether there is compulsion of actions. Terms like ‘potentially applicable’ and ‘considerations’ sit alongside actions which are described in a mandatory way: ‘shall’, ‘should’, ‘as soon as possible’. While it is appropriate for any procedure to contain a combination of mandatory actions and discretionary actions, the effect here is one of uncertainty or contradiction.
106. There are a number of fragmented and unclear references in the SOP to information gathering and familiarity. Given that there are separate SFRS procedures for information gathering and familiarity visits, we think that there is scope for rationalisation in the SOP to aid clarity.
107. The guidance in the SOP advises that when a crew arrive at an incident, the external indicator plate should be consulted, and if there is no plate then OI should be consulted. This is contradictory to the aide-memoire in the SOP which advises that OI should be consulted while the crew are en-route to the incident.
108. The concept of compartment failure could be important in operational decision-making. The SOP contains evacuation criteria relevant to ‘compartment’, but compartment is undefined in the SOP. While ‘compartment firefighting’ is a generally used and understood term, it is likely to mean different things in different buildings. We think some of the references to ‘compartment’ in the SOP regarding domestic high rise needs a specific description or definition.
109. There is a description of the delay that would occur if the first fire appliance attending has a crew of four or if there is a delay in the attendance of the second fire appliance to attend. We think that the emphasis on four is incorrect. A first-attending fire appliance with five crew would be in a similar situation, with the crew carrying out preliminary activities and waiting for a second appliance to attend to fully put in place the system of work.
110. The following bullets list some other issues we noted in the document:
- Reference to Fire Survival Guidance (FSG) could be expanded to aid understanding, the term is undefined.
 - There is guidance on the scenario of wet riser failure and a desired water pressure when charging a riser is specified. There is no similar guidance for normal charging of a dry riser.
 - There is a description which suggests that being presented with a developed fire and persons reported on arrival is a situation that a ‘short crew appliance’ could be faced with. In fact any combination of attendees could encounter such a scenario.

- There is a reference to keeping smoke from the ‘firefighting lift shaft’ that should read ‘firefighting shaft’.
- The single use of the term ‘firefighting lift’ is inconsistent with the other 64 references in the SOP to lifts.
- There is reference to high rise premises designed to contain a fire within the room of origin. We think this generally incorrect other than perhaps for those buildings fitted with an automatic suppression system. The reference should be to the flat of origin.
- There are references in the SOP to fire division, and wet riser threshold that are out of date, and reference to legislation that was repealed many years ago.

111. When compared to some of the guidance used outside of Scotland, the SFRS document is written in a very prescriptive way. We think that the structure and content of the SOP has scope for improvement.

Recommendation No. 6

We are mindful that a general document conversion programme is in progress and that rewrite of the high rise SOP by the Service is well advanced.

The SOP rewrite should consider the issues we mention in this report to improve its usability for the end users.

Comment on procedures in the SFRS SOP

112. The initial firefighting action for an upper floor fire includes four personnel ascending together by lift with BA ‘under air’ to a bridgehead position at least two floors below the reported fire. Two firefighters are then committed to fighting the fire in BA with water supplied from the riser from the floor below the fire. The other two personnel who had arrived with the firefighting team (the lift operator and the Fire Sector Commander (FSC)) then return to the ground floor (or access level) by lift and remove their BA (though of course there is scope to have a pre-determined alteration to this procedure due to building constraints).
113. The return of the FSC to the ground floor to remove BA leaves the firefighting team without close support or assistance until someone returns to or arrives at the bridgehead.
114. The fact that the four personnel are in BA ‘under air’ is designed to offer respiratory protection in the event that fire or smoke is unknowingly affecting the lift arrival floor. This part of the procedure is prescriptive and has its origin in a firefighting incident that occurred almost 20 years ago, following which the Health and Safety Executive issued an Improvement Notice to the then Fire Brigade to provide a safe system of work.
115. The reason for the FSC’s return to the access floor is to remove BA and return the personal tally to the BA entry control. After this the FSC returns to the bridgehead and the Breathing Apparatus Entry Control Officer (BAECO) relocates to the bridgehead.

116. Personnel generally raised issues with ourselves regarding this part of the SOP. The Service has an Operational Assurance process whereby issues that arise from exercises, training and incidents can be reported on and action taken where appropriate (and we saw good examples of this relative to high rise incidents and training). However the issues raised are more generic and not issues likely to be raised through the Operational Assurance process.
117. The initial procedure in the SOP is emotive for station-based personnel and we received suggestions for change, such as:
- the procedure should not be delayed if only three firefighters are initially available to ascend, and a firefighter team leader could make the decision about suitability of bridgehead
 - the FSC should be able to remain at the bridgehead rather than return to the access level.
118. Generally, SFRS crews consider that the procedure works well in areas where the weight of resources is in attendance promptly. In other areas or situations it can be challenging and put the incident commander under pressure and in a dilemma. First attending crews could be placed under psychological pressures by being unable to attempt rescue or search if the incident is serious or is 'persons reported'. (The SFRS has a rapid deployment procedure in section 6.2.4 of the SFRS's BA POG (Policy and Operational Guidance) but this cannot be used with this SOP).
119. While the initial attending incident commander always has the potential to use operational discretion where relevant, delay to supporting appliances is not unusual and is foreseeable, therefore such a situation is outside the scope of operational discretion.
120. The firefighting procedure in the SOP is prescriptive and removes a level of risk assessment and decision making from the incident commander. None of the high rise procedures that we examined from other FRSs contained this level of prescription.
121. One of the issues that the Grenfell Tower fire has highlighted is the requirement for FRSs to have in place procedures for partial or full evacuation of tall buildings in the event of significant failure of the building. Evacuation planning is an evolving area as identified elsewhere in the report and the SFRS has introduced some evacuation related content into the SOP. As the Service updates its procedures there is scope for developing the SOP to reflect the Service's evacuation arrangements and associated record keeping.
122. The SOP, having being written principally for domestic premises, would benefit from consideration of the range of issues that may apply to non-domestic high rise buildings. For example, there may be unknown potential issues with the availability, performance and use of lifts in non-domestic premises out of hours. And conversely, the information available while attending an incident in some other buildings, for example a high rise hospital, may be good and reliable to inform a course of action.

How the SOP guidance is interpreted and implemented

123. Commonly, there are local arrangements in place in relation to attendance sequencing and allocation of tasks.
124. Reportedly, the investigation procedure contained in the SOP is commonly used where a concierge is already in attendance and there is good information from CCTV.
125. During the course of our inspection we tested the awareness of personnel on the content of the SOP. The knowledge displayed was good but given that most of our visits were pre-announced, this could be expected as a consequence of pre-visit preparation. However, during one unannounced visit we experienced awareness that did not match the high standard experienced at other venues.
126. During our visits we engaged separately with Crew Commanders and Watch Commanders and it was evident that those role holders are generally knowledgeable in high rise procedures and issues and often have strong views on the subject.
127. We have identified earlier in the report that the SOP has a mixture of discretion and compulsion of action. We found that the procedures are generally interpreted as prescriptive.
128. Some Crew and Watch Commanders interviewed describe a moral dilemma where they are the incident commander and the initial attending crews cannot proceed to the fire to commence firefighting and searching until additional resources attend.

Recommendation No. 7

The SFRS should reflect on the strong views among its firefighting staff and consider whether there is scope to refine the set down procedures for tackling fires contained in the SFRS high rise SOP, taking into account the different levels of risk and by factors such as modern lift protection, smoke hood availability, automatic suppression systems, and information from cameras and attending staff.

Accessing information while en-route or on arrival at an incident

129. We have highlighted in some previous inspection reports that crews rarely use the OI tablet to access risk information and that the familiarity of operational personnel with the system varies greatly. Once again, we evidenced this during the fieldwork element of this inspection. Some staff are very comfortable and proficient using the tablet and the system, while others are less proficient.
130. The functionality of the SFRS OI system tablet contains features that are a barrier to its use by initial attending crews. Even though the SOP instructs reference to the high rise aide memoire while en-route, this is not followed by personnel. Incident commanders that we spoke to were quite clear that accessing the tablet en-route is impractical for most attendance journeys.
131. In some respects, personnel considered that the previous vehicle mounted data system had more functionality than the tablet. We received a number of suggestions for features which might encourage the use of the tablet and improve functionality, such as easier log in, link to mobilising system, automatic display of premises information, display of route information. Some of these issues are explored in-depth in our thematic inspection report on OI¹⁵.

Alteration to procedures

132. Where a standard procedure cannot be applied, such as where there is a lift capacity restriction, or where in maisonette flats a bridgehead may be four floors below the fire floor, it is an obvious preplanning approach to set out what the alternative procedure is. The high rise SOP advises that in such a case OI should be created and a 'Fire Service Response Plan' should be produced. This offers some contradiction because the creation of OI is a requirement for all domestic high rise, not only for situations where the SOP procedures cannot be fully applied. (Though as we have seen, this is not necessarily the practice).
133. We have to conclude that the term 'Fire Service Response Plan' means different things in different documents. In the Service's OI guidance 'Fire Service Response Plan' is a coloured 3-dimensional representation of a building, and it is required in nearly all cases where OI is recorded. In the high rise SOP, the term 'Fire Service Response Plan' is clearly used to describe a pre-determined variation to a standard procedure. And within the Service's TfOC module there is reference to a 'Tactical Incident Plan' as a document that can be referenced en-route to an incident.
134. From a practical perspective, the use of a pre-planned alternative is well understood within the Service, but interchange of language can be confusing, and standardisation of terminology will assist with consistency and common understanding.

¹⁵ *ibid.*

Carrying equipment to an upper floor

135. Firefighting on an upper floor requires appropriate equipment to be taken up with the firefighters. This equipment is normally contained in a box stowed on the appliance and which is handled by firefighters and then placed in the lift with the initial ascending team. Often firefighters require to stand on the equipment in the box while in the lift due to the lift dimension. In some locations, bags are used instead of a box.
136. The box contains hose and other equipment. The hose can be on the roll or flaked, personnel have individual preferences which doesn't necessarily match the local practice. A legacy high rise box which contains flaked hose is shown in figure 5.



Figure 5: Legacy high rise equipment box in SFRS (with flaked hose)

Source: HMFSI

137. The SFRS introduced a new standard box of greater capacity. Some high rise buildings have relatively narrow staircases and landings and the new boxes are difficult to manoeuvre in some buildings and in some cases are therefore not in use. We witnessed the substantial effort required by crew members carrying a new-style box containing equipment between floors at an exercise.
138. The physiological demands on firefighters is an important factor in high rise firefighting and has been the subject of academic study. High rise boxes containing equipment are carried from the appliance to the lift. One of the principles of manual handling is to avoid lifting where possible and appropriate; we are therefore surprised that the new boxes are not fitted with wheels.
139. In one LSO area, boxes are carried empty on the appliance and filled on arrival at the incident. Elsewhere the box is stowed on the appliance already filled.

140. Other UK FRSs often use a combination of a backpack (see figure 6) with other equipment carried separately. The hose is in the form of a Cleveland lay¹⁶ which lends itself to being carried over the shoulder. Elsewhere in the UK some firefighters advocate the Cleveland lay as easier to deploy in a high rise building and also easier to carry.

Recommendation No. 8

The SFRS should review its arrangements for transporting equipment for high rise firefighting with a view to introducing an arrangement which is physically less demanding than the existing arrangements.



Figure 6: Backpack for high rise equipment used in another FRS
Source: HMFSI

¹⁶ Cleveland lay comprises flaked hose with carrying loops.

Comparison with firefighting guidance elsewhere

141. National operational guidance for firefighting in tall buildings is issued by the National Fire Chiefs Council (NFCC)¹⁷. The national document contains considerations and general guidance rather than prescriptive actions.
142. There is a reference in national guidance to Stairway Protection Teams, whose function may be assigned to the 'Fire sector' then assigned to the 'Search sector'. While the SFRS adopts the national sectorisation model for incident command it does not operate a stairway protection equivalent.
143. We are aware of developments in some FRSs in England regarding the potential for firefighters to move above the bridgehead wearing BA but not 'under air'. This has been a disputed issue and has led to challenge from the Fire Brigades Union. At the time of writing this report there was no plan for the SFRS to adopt such an approach. Some comparison between the SFRS procedures and other UK FRSs is made earlier in the report. While this has not been a topical issue in Scotland, we may revisit this aspect of high rise firefighting procedure if relevant developments or changes occur in Scotland.

Cabling issues



Figure 7: Dislodged cabling
Source: SFRS

¹⁷ <https://www.ukfrs.com/nog>

144. Cable entanglement is a risk to firefighters where surface mounted cable is not held securely and can become loose due to heat. While it is not an issue that is unique to high rise buildings it has been a factor in some previous high rise fires. There have also been issues with riser shafts being used for installing telecom cables and subsequent compartment breaches.
145. Entanglement risk has been well identified by the Service. BA Sets have entanglement protection incorporated within them and BA teams carry wire cutters. The SFRS has run entanglement courses using custom-built entanglement training rigs at training establishments, and provided guidance on how to use cutters.
146. The potential for cable entanglement is checked during the OAV but this can only be checked in communal areas.
147. During our fieldwork we were made aware of two occasions where there were issues with cabling in high rise buildings which were then raised locally by the Service.
- a. An entanglement risk in a flat fire due to unsupported cabling (see figure 7). The SFRS raised this with the housing provider.
 - b. An issue with inappropriate telecom cabling discovered during an OAV. The SFRS raised this with the telecom provider.

Good Practice

The SFRS has been proactive in its approach to addressing entanglement risk and it is reassuring to see that SFRS staff are aware of the hazards presented with regard to cabling and actively taking steps to address any areas of concern observed during OAVs and at incidents.

TRAINING AND EXERCISING



Figure 8: SFRS appliances at a high rise exercise
Source: HMFSI

148. New firefighter entrants to the Service receive technical and practical training on high rise firefighting which includes a physical visit to premises.
149. The SFRS made a substantial change to its ongoing training programme for firefighters in April 2022. Prior to this change, ongoing training of operational staff included a competence framework containing a number of modules to be undertaken at set frequencies. The programme was made up of:
 - 12 core skills module to be completed over 12 months
 - 12 standard modules to be covered over 36 months
 - 24 advanced modules tailored to each station risk profile

150. One of the advanced modules was high rise firefighting and this was delivered on a three-year rolling programme in wholetime fire stations and in those RDS-crewed stations where the crew might be expected to form part of the attendance at a high rise incident.
151. LSOs were responsible for the programming of training in their area and this resulted in different schedules and a lack of consistency across the country regarding topics being covered at the same time. Among other things, this had an impact on the introduction of new or amended procedures.
152. In the new system, training topic scheduling is aligned across the country. Some of the former modules have been combined to create a single topic, reducing 36 modules down to 24. The high rise module has been subsumed into a new firefighting module with wider scope.
153. The programming of topics is undertaken on a quarterly basis by an Operational Competency Strategy Group (OCSG), following consultation with Directorates. The OCSG works six months ahead and, through consultation, will agree on what emerging risks, new equipment or procedures need to be covered.
154. Following on from its research, development and testing, the Service plans to introduce new procedures relative to building evacuation, smoke hoods and smoke curtains – each of which will be relevant to high rise firefighting. The new training system will allow these changes to be introduced in a more structured and efficient way than the previous system would have allowed.
155. Training packages for Operations Control staff and for Flexi Duty Officers are being reviewed to refresh them and align them with those intended for firefighters. The alignment of schedules will enable easier participation for those staff to form part of an exercise or training session.
156. The high rise SOP contains a general desire to conduct on-site exercises and describes the same as imperative. But there is little further guidance and no prescriptive expectation is offered in that document. Within the previous training programme, a simulated high rise exercise could be a 3-yearly event. Under the new system, LSO areas can decide how frequently high rise exercises are carried out, and this would be scheduled into the programme.
157. In one LSO area we visited, there are three high rise exercises undertaken per year, organised on a geographical basis.
158. Two of the SFRS's three training centres have a training building that can be used for simulated high rise training. There have been ad-hoc arrangements when the Service has taken the opportunity to hold an exercise in a high rise building which is unoccupied prior to demolition. The SFRS has also been undertaking high rise exercises to test and develop evacuation techniques.
159. Flexi Duty Officers are expected to undertake an incident command re-accreditation after three years. A range of incident scenarios are used as part of this process but there is not currently a scenario for a high rise fire; we were advised that the incident command assessment team have plans to develop such a scenario. A high rise scenario virtual table top exercise was trialled in September 2021. We spoke with a number of attendees and their experience was very positive in respect of the learning benefit.

ACTION ON ISSUES

160. The SFRS has had a major focus on cladding issues and a good awareness. The Service issued a briefing to its staff regarding buildings where there were fire related issues with cladding, and generally followed national guidance that was produced. Some blocks of flats were the subject of specific action, which included the introduction of a 'waking watch', due to the type of cladding system in place. Site specific procedures were put in place and the situation was well monitored by the SFRS with a view to safeguarding residents and workers while remediation was carried out.
161. The Scottish Government approach following the Grenfell fire and in response to the GTI Phase 1 report is well documented on the Scottish Government website¹⁸. The Scottish Government adopted a partnership approach¹⁹ when examining the Phase 1 report. The SFRS was involved in this partnership approach, along with representatives from Scottish Government, Building Standards, Safer Communities, Housing and other agencies. The SFRS was tasked with considering those recommendations in the GTI Phase 1 report that refer to FRs.
162. The SFRS assessed those GTI recommendations, and created a gap analysis and action plan. The Service created its own working group to action these issues along with separate issues identified by London Fire Brigade. The progress of the internal group along with the progress of the wider Grenfell related partnership work was the subject of regular updates to the SFRS management and Board.
163. The Service is a member of a Scottish Government partnership working group on Phase 2 of the GTI and has established its own 'High Rise Continuous Improvement Group' to monitor GTI developments and learn from other significant fires.

Good Practice

The SFRS is a very effective partner in the joint response in Scotland to the GTI outcomes.

¹⁸ <https://www.gov.scot/publications/scottish-government-response-grenfell-inquiry-phase-1-recommendations/>

¹⁹ HMFSI also had an involvement in the post-Grenfell partnership approach in Scotland.

FURTHER DEVELOPMENTS

New appliances

164. Some of the fire station-based personnel we spoke to expressed concern regarding the ability to deal with a riser failure due to the Service's new pumping appliances carrying less firefighting hose than older vehicles. Staff also raised concern with regard to the potential for a Rapid Response Unit (RRU) to be an attending appliance. While these concerns were raised as a potential, there were no examples where this had been an issue.

Radio systems

165. Radio communications can be affected by the characteristics of individual buildings, and given that SFRS crews visit domestic high rise buildings at least four times a year, then the Service should be well sighted if there are known issues with particular domestic high rise buildings.
166. Radio communications at the Grenfell Tower fire in London were described in the Inquiry report as unreliable.
167. Improvement in radio communications at incidents is a recurring issue with the SFRS and of course is not an issue unique to high rise incidents. We have received regular feedback from fire station personnel during our local area inspection work that there is a desire for firefighters to have improved and more reliable portable radios. During our fieldwork for the high rise inspection, feedback from personnel on radios was more mixed.
168. At a high rise incident, the incident commander is located at the entry level and can feel a remoteness from the firefighting activities. Reliable communications is therefore important for incident command arrangements to be effective.
169. We have commented previously on portable radios in the SFRS in a report²⁰ published in 2020. During the relevant fieldwork for that inspection it was identified that the SFRS was addressing weakness identified in incident ground communications, and had a commitment to procure new digital fireground radios. We made a formal recommendation in our report that the user implementation group for the procurement of new digital fireground radios should include end users.
170. The effects of the Covid-19 pandemic have had an influence on the Service's progress of the radio replacement scheme. Provision of replacement radios is an ongoing project that the Service thinks might take a further five years to complete. We believe, given the importance of reliable communication, not only in high rise buildings but for all operational incidents, that the Service should consider this schedule and take appropriate steps to ensure that this issue is resolved within a reasonable timeframe.

²⁰ HMFSI, *Command and Control: Aspects of the Scottish Fire and Rescue Service Incident Command System*, 2020

National engagement

171. The SFRS is well engaged with national developments relative to high rise through representation on the NFCC Fires in Tall Buildings Working Group.

Building Evacuation

172. Full evacuation of high rise domestic buildings is very uncommon. Partial evacuation has a more common potential to occur: and even a full evacuation will likely occur as a phased development. Because high rise domestic buildings operate with a 'stay put' arrangement, full or partial building evacuation during a fire is normally initiated by the FRS.
173. The existing arrangement for evacuation involves firefighters knocking on the doors of persons considered at risk from the fire to alert those persons and evacuate them.
174. Evacuation policy arrangements and training are the subject of a recommendation from the GTI and there is an obvious relationship between evacuation and the provision of information on resident's capability to self-evacuate. We have already mentioned PEEPs and record keeping in respect of resident capability and the associated difficulties.
175. In response to the GTI recommendation, the UK government has been involved along with partners, in evacuation policy development. At the time of writing, research is ongoing including involvement by the University of Central Lancashire.
176. The SFRS has been developing improvements to its own evacuation procedures. As an interim improvement, it introduced a record sheet into the high rise SOP for recording evacuation. It has developed a draft evacuation procedure and has trialled this at table top exercises and at a number of role play rehearsals in a vacant high rise block. Scenarios have been designed to test evacuation procedures and FSG handling with scenarios withheld from crews to reflect realistic conditions.
177. While we have seen a draft version of an SFRS evacuation manual, it is an unfinished document subject to alteration and accordingly we have made no assessment of it.
178. One of the challenges which will face the Service in the future is the maintenance of skills and awareness of the evacuation procedure because it will be infrequently required in practice.
179. The Service operates a number of Command Support Units (CSUs): these are crewed and operated by firefighters on the dual crewing system. At a prolonged high rise incident, CSUs have a role to play in record keeping and communications. CSUs and their crews have been involved in the evacuation rehearsals.
180. One of the factors for a CSU is set-up time. There may be a significant time delay for attendance due to the appliance location and crewing arrangement of the CSUs.
181. We have previously reported on the training and development of CSU crews in a separate report²¹.

21 HMFSI: *Command and Control: aspects of the Scottish Fire and Rescue Service Incident Command System*, 2020

Fire survival guidance

182. The SFRS's Operations Control rooms deal with receipt of calls, mobilising, and communications. One of the areas for development is the arrangement for multiple fire survival guidance calls, and 'talk group' radio procedures. Some of this development work is national and the SFRS is well engaged.
183. The outcome of the GTI has caused the SFRS to assess its capacity to deal with multiple FSG calls. There are interrelationships between the recording of FSG information, the availability of this information and the importance of good communications and access to the information at the incident. The Service has developed and tested its procedures during its evacuation exercises.

Smoke curtains

184. Normal firefighting procedures in high rise buildings involves hose passing through door openings and since the door will be held ajar by this hose, smoke can spread into escape routes. Many domestic high rise buildings have a single stair and a consequence of firefighting could be smoke-logging of the sole escape route. One way to reduce this is by the use of a temporary smoke barrier. The SFRS has been researching the use of smoke curtains and is procuring them to be carried on fire appliances. The final disposition is still to be determined. This should be a useful addition for use at some high rise fires.

Smoke hoods

185. The provision of smoke hoods by FRSs was a recommendation from the GTI. Smoke hoods (or escape hoods) offer particulate filtration and provide some respiratory protection for short term exposure to smoke. The SFRS has researched the provision of smoke hoods, and this has included analysis of incident data and liaison with other FRSs that were undertaking trials of the equipment.
186. The outcome is that the Service has procured smoke hoods with a view to carrying two per fire appliance. This will enhance the SFRS's rescue capability at all types of fires and particularly at high rise fires.

Good Practice

The provision of smoke hoods and smoke curtains is an example of the SFRS improving its firefighting and rescue capability and taking into account recommendations of the GTI.

Conclusion

187. This report contains recommendations where we think that the SFRS has scope to improve performance and consistency regarding its arrangements for firefighting in high rise buildings. Our overall assessment is positive and we acknowledge that the Service is working to progress certain workstreams for areas under development.

List of Recommendations

| | |
|----|---|
| 1. | <p>The provision of fire safety measures in domestic high rise buildings is of course the responsibility of building owners and others in control of buildings. However retrofitted fire systems may result in implications for the SFRS.</p> <p>We recommend that the SFRS firms up its policies and internal guidance on fire safety standards in high rise domestic buildings with a view to influencing a standard risk-based approach in the provision of:</p> <ul style="list-style-type: none"> a. fire warning systems, and b. SFRS controlled evacuation systems. <p>This should take into account the suitability of these systems and potential problems and interactions.</p> |
| 2. | <p>We think that it would improve safety if the external indicator plate used on domestic high rise buildings was adopted as a standard in Scotland and a mandatory requirement to install and maintain these plates was imposed on building owners.</p> <p>We recommend that, if the SFRS shares our view, then the SFRS should work with Scottish Ministers to influence such a change to introduce a statutory duty (perhaps achievable by amending the Fire Safety (Scotland) Regulations 2006).</p> <p>(This recommendation is made, albeit it is somewhat indirect, to the SFRS given that the statutory power of the HMFSI facilitates the making of recommendations only to the SFRS).</p> |
| 3. | <p>The SFRS should review its expectation regarding the recording and use of OI for high rise buildings and take steps to implement a standard approach.</p> |
| 4. | <p>The SFRS should develop its own policy on the suitability of 'Premises Information Boxes' for high rise domestic blocks so that a standard approach can be taken where housing providers may propose to introduce these boxes for their buildings.</p> |
| 5. | <p>The SFRS should reconsider the introduction of a risk-based OAV inspection frequency, in line with what exists for fire safety audits and OI inspections generally, where appropriate.</p> |
| 6. | <p>We are mindful that a general document conversion programme is in progress and that rewrite of the high rise SOP by the Service is well advanced.</p> <p>The SOP rewrite should consider the issues we mention in this report to improve its usability for the end users.</p> |

| | |
|----|---|
| 7. | The SFRS should reflect on the strong views among its firefighting staff and consider whether there is scope to refine the set down procedures for tackling fires contained in the SFRS high rise SOP, taking into account the different levels of risk offered by features such as modern lift protection, smoke hood availability, automatic suppression systems, and information from cameras and attending staff. |
| 8. | The SFRS should review its arrangements for transporting equipment for high rise firefighting with a view to introducing an arrangement which is physically less demanding than the existing arrangements. |

Glossary

| | |
|---------------------|--|
| BA | Breathing Apparatus |
| CSU | Command Support Unit |
| Dual crewing | An arrangement where more than one fire appliance is crewed by the same crew. The crew having the ability to respond with whichever appliance is required. |
| EAS | Evacuation alert system |
| FRS | Fire and Rescue Service |
| FSG | Fire survival guidance |
| FSRP | Fire Service Response Plan |
| | a 3-dimensional image of premises as part of recorded risk information; or |
| | a pre-arranged non-generic operational procedure used where generic procedures cannot be followed |
| GT | Grenfell Tower |
| GTI | Grenfell Tower Inquiry |
| METHANE | Mnemonic for Major incident, Exact location, Type of incident, Hazards, Access, Number of casualties, Emergency services |
| OI | Operational Intelligence |
| PEEP | Personal Emergency Escape Plan or Personal Emergency Egress Plan |
| PIB | Premises Information Box |
| RDS | On-call firefighters working the Retained Duty System |
| RRU | Rapid Response Unit – a small fire appliance with lower crew and equipment capacity than a standard fire appliance |
| SFRS | Scottish Fire and Rescue Service |
| the 2005 Act | Fire (Scotland) Act 2005 |
| Waking watch | An arrangement where persons patrol all floors and the exterior perimeter of a building in order to detect a fire early, raise the alarm, and initiate evacuation. This is normally a temporary arrangement. |

Appendix A

About HM Fire Service Inspectorate in Scotland (HMFSI)

HMFSI is a body that operates within, but independently of, the Scottish Government. Inspectors have the scrutiny powers specified in section 43B of the Act. These include inquiring into the state and efficiency of the SFRS, its compliance with Best Value, and the manner in which it is carrying out its functions.

HMFSI Inspectors may, in carrying out inspections, assess whether the SFRS is complying with its duty to secure Best Value and continuous improvement. If necessary, Inspectors can be directed by Scottish Ministers to look into anything relating to the SFRS as they consider appropriate.

We also have an established role in providing professional advice and guidance on the emergency response, legislation and education in relation to the Fire and Rescue Service in Scotland.

Our powers give latitude to investigate areas we consider necessary or expedient for the purposes of, or in connection with, the carrying out of our functions:

- The SFRS must provide us with such assistance and co-operation as we may require to enable us to carry out our functions.
- When we publish a report, the SFRS must also have regard to what we have found and take such measures, if any, as it thinks fit.
- Where our report identifies that the SFRS is not efficient or effective (or Best Value not secured), or will, unless remedial measures are taken, cease to be efficient or effective, Scottish Ministers may direct the Scottish Fire and Rescue Service to take such measures as may be required. The SFRS must comply with any direction given.

We work with other inspectorates and agencies across the public sector and co-ordinate our activities to reduce the burden of inspection and avoid unnecessary duplication.

We aim to add value and strengthen public confidence in the SFRS and do this through independent scrutiny and evidence-led reporting about what we find. Where we make recommendations in a report, we will follow them up to assess the level of progress.

We will aim to identify and promote good practice that can be applied across Scotland. Our approach is to support the SFRS to deliver services that are high quality, continually improving, effective and responsive to local and national needs. The terms of reference for inspections are consulted upon and agreed with parties that the Chief Inspector deems relevant.

Appendix B

How this inspection was carried out

The purpose of this inspection is to examine aspects of the SFRS's arrangements for firefighting in high rise buildings. Firefighting cannot be considered in isolation, a number of issues are interrelated to firefighting. In particular we also considered issues related to:

- risk
- fire safety features
- building checks
- risk information.

An inquiry by the Inspectorate can be self-directed or can be subject to direction by Scottish Ministers. This inquiry into the SFRS is self-directed by the Chief Inspector, Robert Scott QFSM. The following persons also contributed to the Inspection and to the report:

Brian McKenzie, Assistant Inspector

Graeme Fraser, Assistant Inspector

Rick Taylor, Assistant Inspector

Martin Riach, Inspection Manager

Richard Gorst and Steve Harkins, who left the Inspectorate prior to the inspection concluding, were also participants in the inspection fieldwork.

A quality assurance check on a draft of the report was carried out by Assistant Inspector John Joyce QFSM who had no previous participation in the inspection process and external assurance was provided by Wayne Brown, Deputy Chief Officer, West Midlands FRS.

The decision to carry out this inspection was intelligence-led and risk-based, influenced by the importance of the subject area and by our interest in the risks associated with this area of work.

The progress of this inspection was impacted by staff turnover, and the timescale and engagement methods have been influenced and impacted upon by Covid-19 pandemic restrictions.

Methodology

This inspection has involved a number of different methods of evidence gathering and analysis:

- a desk top data review of documents and data supplied by the SFRS. We undertook a sense check and assessment of the content of procedural documents;
- a number of face-to-face and virtual interviews with SFRS staff who are responsible for the development of policy and training and their implementation;
- examination of SFRS records of risk information held about high rise buildings;
- visits to seven different LSO areas. During these visits we:
 - spoke to staff at 14 fire stations and sampled the extent to which SFRS firefighting staff had knowledge of procedures and had discussion of resulting issues and practices
 - accompanied crews on five visits to inspect different domestic high rise buildings
 - spoke to fire safety enforcement staff and flexi duty managers;
- observed two role play exercises in an empty high rise block in Scotland and observed the incident support arrangements at the Operations Control during a role play incident;
- engaged with one local authority which had installed communal fire warning systems in all of its high rise domestic blocks;
- a number of virtual interviews with Scottish Government policy staff who are responsible for the development of policy and its implementation;
- visited two large UK Fire and Rescue Services outside of Scotland to discuss their approach to high rise issues. During one of these visits observed a role play exercise in a domestic tall building, and
- we compared SFRS firefighting procedures against UK National Operational Guidance (NOG), which is issued by the NFCC Fire Central Programme Office and with procedures in place in three other UK FRSs.

Appendix C

Recommendations for FRSs extracted from GTI Phase 1 Report Chapter 33

FRS: knowledge and understanding of materials used in high-rise buildings

Para 33.10b all FRSs 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.

Section 7(2)(d) of the Fire and Rescue Services Act 2004²²

Para 33. 11a LFB²³ review, and revise as appropriate, Appendix 1 to PN633²⁴ to ensure that it fully reflects the principles in GRA 3.2²⁵

b. 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.

Plans

Para 33.12. insofar as it is not already the case, that all FRSs be equipped to receive and store electronic plans and to make them available to incident commanders and control room managers.

Communication between the control room and the incident commander

Para 33.14a LFB review its policies on communications between the control room and the incident commander;

b. 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;

c. all CROs of Assistant Operations Manager rank and above receive training directed to the specific requirements of communication with the incident commander;

d. a dedicated communication link be provided between the senior officer in the control room and the incident commander

²² This legislation does not apply in Scotland where there is equivalent.

²³ LFB: London Fire Brigade

²⁴ PN633 is a LFB policy document.

²⁵ Generic Risk Assessment 3.2

Emergency calls

| |
|---|
| Para 33.15a 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 |
| b. the LFB provide regular and more effective refresher training to CROs at all levels, including supervisors; |
| c. all fire and rescue services develop policies for handling a large number of FSG calls simultaneously |
| d. electronic systems be developed to record FSG information in the control room and display it simultaneously at the bridgehead and in any command units |
| e. policies be developed for managing a transition from "stay put" to "get out". |
| f. control room staff receive training directed specifically to handling such a change of advice and conveying it effectively to callers |
| Para 33.16 steps be taken to investigate methods by which assisting control rooms can obtain access to the information available to the host control room. |
| Para 33.17 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. |

Command and control

| |
|--|
| Para 33.18a the LFB develop policies and training to ensure better control of deployments and the use of resources |
| b. 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) |
| Para 19 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. |
| Para 20. 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 |

Equipment

| |
|---|
| Para 33.21a 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. 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. |

Evacuation

Para 33.22b fire and rescue services develop policies for partial and total evacuation of high-rise residential buildings and training to support them;

g. all fire and rescue services be equipped with smoke hoods to assist in the evacuation of occupants through smoke-filled exit routes

Co-operation between emergency services

Para 33.31 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.

Para 33.32 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

Para 33.33 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.

Para 33.34 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.



© Crown copyright 2022

ISBN: 978-1-910349-43-4

HM Fire Service Inspectorate
St Andrew's House
Edinburgh
EH1 3DG

APS Group Scotland