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This circular is	<b>For guidance</b>	<b>No response required</b>	
This circular is	<b>Relevant to the National Framework</b>		
Status	<b>This circular provides advice on fighting fires in high rise buildings, and is supplementary to FRS Circular 32/2006 and complements FRS Circular 55/2004.</b>		

## *Supplementary Advice On Fighting Fires in High Rise Buildings (Generic Risk Assessment Review)*

Issued by:

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Addressed to:

**The Chair of the Fire and Rescue Authority**  
**The Chief Executive of the County Council**  
**The Clerk to the Fire and Rescue Authority**  
**The Clerk to the Combined Fire and Rescue Authority**  
**The Commissioner of the London Fire and Emergency Planning Authority**  
**The Chief Fire Officer**

Please forward to:

**Responsible Managers for:**  
**Fire Safety**  
**Operations**  
**Integrated Risk Management Planning**

Summary

This circular provides supplementary advice on fighting fires in high-rise buildings in advance of the review of GRA 3.2 "Fighting Fires – In High Rise Buildings". This circular is issued to complement Fire and Rescue Service Circular 32/2006, some aspects of which have also been updated to reflect recent developments in the design of high rise buildings which will impact on operational pre-planning and response, and should be read in conjunction with FRSC 55/2004.

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## 1.0 Background

- 1.1 FRS circular 32/2006 issued to FRS's in June 2006 provides guidance on fighting fires in high rise buildings in advance of the review of the GRA 3.2 "Fighting Fires - in High Rise Buildings".
- 1.2 Further developments in the design of high rise buildings have provided an opportunity to supplement the interim advice on pre-planning and operational response to fires in high rise buildings.

## 2.0 Fire and Rescue Service Circular 55/2004

- 2.1 FRS's will recall that they were apprised of the results of the research undertaken by the Building Disaster Assessment Group (BDAG) through FRS Circular 55/2004. This circular remains extant and amongst other matters contains advice on firefighting in high rise buildings that remains relevant and will be incorporated into the revision of GRA 3.2.
- 2.2 **Consequently, it is important that this Circular and FRS Circular 32/2006 be read in conjunction with the earlier FRS Circular 55/2004.**
- 2.3 In particular, the BDAG research identified that there is a significant disparity between the assumptions contained in the guidance on building design in high rise buildings for the provision and standard of fire mains and the operational procedures and equipment used by the FRS.
- 2.4 The consequences of this disparity are such that when firefighting in high rise buildings fitted with dry rising mains there may be a height beyond which there is insufficient pressure to undertake adequate compartment firefighting techniques.
- 2.5 As a result of this disparity British Standards Institution (BSI) was asked to review the relevant standard for provision of fire mains in buildings (BS 5306: Part1), to reflect the results of the BDAG research and the need to have firefighting systems in high rise buildings which would support compartment firefighting.
- 2.6 FRS's should ensure that the contents of FRS Circular 55/2004 are reiterated to those responsible for operational preplanning, operational response and fire safety design.
- 3.0 **BS 9990:2006 Code of practice for non-automatic fire-fighting systems in buildings**
- 3.1 The review of BS 5306:1 has resulted in the publication of BS 9990 which brings up to date the guidance on private fire mains (both internal and external), taking into account the research carried out by the BDAG.
- 3.2 This standard has been prepared in Technical Committee FSH/14, Fire precautions in buildings, in conjunction with CFOA representatives including the CFOA Operations Committee.

- 3.3 The principal changes from BS 5306-1 are that the new standard no longer gives guidance on when and where these systems are needed (which is now given in, for example, guidance in support of national building regulations), but deals solely with the design of the systems, including recommendations for provision, siting, installation and maintenance.
- 3.4 The guidance on the provision of hose reels and foam inlets remains in the revised BS 5306-1, the technical specifications for hose reels being given in BS EN 671-1.
- 3.5 BS 9990, which is not retrospective, was published in May 2006 and is referenced in the guidance supporting the Fire Safety Order. It is also scheduled to be referenced in the revised guidance supporting the Building Regulations in Approved Document B (ADB).
- 3.6 **The standard is significantly different from the one it replaces.** Namely:
- **It has been designed around the use of 51mm hose and firefighting branches, which are effective whilst operating at lower pressures. This will enable the most effective and efficient system to be provided<sup>\*</sup>.** If FRS's continue to use 45mm hose and branches with significantly different hydraulic characteristics, they will potentially replicate the disparity that the new BS was developed to address.
  - A maximum design charging pressure for dry fire mains of 10 bars was agreed by CFOA operations, which enabled a revised change over point from dry to wet system to be calculated. This revision allows sufficient pressure and flow to be achieved at the fire main outlet to support effective firefighting sprays and jets.
  - **The trigger height for wet fire mains systems has consequently been reduced from 60m to 50m.**
  - **The running pressure at outlets of wet fire mains systems has been increased from 4-5 bars to 8 bars.**

#### 4.0 High Rise Equipment Package

In light of the impact of the selection and use of firefighting equipment upon FRS's, the National Procurement Board has established a task and finish group to develop contract arrangements for an agreed equipment package for fighting fires within high rise buildings.

#### 5.0 Pre planning considerations

- 5.1 In addition to the advice in FRS Circulars 55/2004 and 32/2006, FRS's will need to take cognisance in their planning processes of the type of systems installed in buildings (BS5306 or BS9990), to ensure their operational practices and procedures align to the building design assumptions.

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<sup>\*</sup>To reiterate the findings identified within FRSC 55/2004, the use of this type of hose and branch will lead to improvements in hydraulic efficiencies with existing fire main installations conforming to BS 5306 and to those new installations which meet the new BS 9990.

- 5.2 FRS's should also note that buildings other than those meeting the definition of high rise buildings within paragraph 3.1 of FRS Circular 32/2006 may also be fitted with firefighting shafts and/or internal fire mains. In particular, firefighting shafts including fire mains (but not firefighting lifts) are provided in some buildings over 7.5m. Where such facilities have been provided within the building they should be used where feasible.
- 5.3 Paragraph 3.7 of FRS Circular 32/2006 refers to the bridgehead location and paragraph 3.12 to the provision of an additional covering jet from the bridgehead. BS 9990 has been developed on the basis of the attack and covering jets being provided from adjacent floors (which may be one or more floors beneath the fire floor, dependent upon the extent of fire development). This was done to account for potential congestion in the lobby and staircase as well as the provision of effective safe operating procedures for the firefighting crews.
- 5.4 Paragraph 3.8 of FRS Circular 32/2006 refers to contingency arrangements for defective riser installations. FRS's should ensure that in developing contingency arrangements they also take cognisance of the design characteristics of fire mains to ensure that they do not knowingly exceed the design pressure of the system leading to the potential consequence of system failure.
- 6.0 **Building Regulation Consultation Processes.**
- 6.1 FRS's will wish to ensure that they apprise their local building control bodies of the new standard for fire mains at the earliest opportunity, due to the reduced height at which permanently charged wet systems are now required and the revised design specification of these systems.
- 6.2 **Whilst this standard is not retrospective FRS's may wish to discuss with building control bodies and developers whether application of the new standard is appropriate for buildings currently under construction where systems have yet to be specified.**
- 7.0 **Review of access and facilities in support of Fire and Rescue Service intervention**
- 7.1 FRS's may also wish to note that as a result of the outcome of the research undertaken by the BDAG, the DCLG, BSI, and the Scottish Building Standards Agency are currently considering what changes may be appropriate to make to the advice and guidance contained in British Standards, Approved Document B (ADB) and Scottish Technical Standards on access and facilities for FRS use. In particular, the recent consultation on the revision to ADB contained proposals DCLG were minded to consider in light of the BDAG work.
- 7.2 Paragraph 4.1 of FRS Circular 32/2006 refers to communications in high rise incidents. FRS's may also wish to note that the recent consultation for the proposed revisions to ADB also includes proposals for disabled communications which would also assist the FRS in undertaking high rise firefighting and search and rescue operations. Furthermore, Research Statistics and Professional Advice Division have recently completed research into generic incident ground communications the results of which will be considered within the review of GRA 3.2.

7.3 DCLG hope to publish a revised Approved Document B around the end of 2006, the contents of which FRS's will wish to take cognisance in future planning for incidents in high rise buildings.

## **8.0 Errata**

8.1 The last sentence of paragraph 2.1 of FRS Circular 32/2006 states '... physically demanding resources intensive' this should be '...physically demanding and resource intensive.'

8.2 Paragraph 3.2 of FRS Circular 32/2006 refers to '... s12 and/or s13 arrangement...' This should refer to Sections 13 and 16 of the Fire and Rescue Services Act 2004, which relate to reinforcement schemes and arrangements for discharge of functions by others.

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