Part K: Guidance on fire risk assessments in complex healthcare premises

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Operational provisions manuals - Part K: Guidance on fire risk assessments in complex healthcare premises 2090:0.5:England

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Contents

Overview

5216

7445

The Firecode Operational provisions manuals include:

* **Part A – General fire safety (available in web format)**
* Part B – Fire detection and alarm systems
* Part C – Textiles and furnishings
* **Part D – Commercial enterprises on healthcare premises (available in web format)**
* Part E – Escape lifts in healthcare premises
* **Part F – The prevention and control of arson in NHS healthcare premises (available in web format)**
* Part G – Laboratories on healthcare premises
* **Part H – Reducing false alarms in healthcare premises (available in web format)**
* Part J – Guidance on fire engineering of healthcare premises
* **Part K – Guidance on fire risk assessments in complex healthcare premises (available in web format)**
* Part L – NHS fire statistics 1994/95–2004/05
* **Part M – Fire safety in atria (available in web format)**

Introduction and scope 2091

General application 2104

This manual provides guidance on fire risk assessments in complex NHS healthcare premises. It is supplementary to the guidance in the "FSO Green Guide" (Department for Communities and Local Government (2006)) and supersedes the guidance contained in Health Technical Memorandum 86 – 'Fire risk assessment in hospitals' and 'Fire risk assessments in Nucleus hospitals'.

Fire risk assessments using the guidance in this manual are required by the Regulatory Reform (Fire Safety) Order 2005 (hereafter referred to as the Fire Safety Order), which came into effect on 1 October 2006.

The guidance in this manual can be used to:

* review, revise and update an existing fire risk assessment; or
* undertake a fire risk assessment for healthcare premises for the first time.

A fire risk assessment template is available for download (see below).

The major part of this manual ('Risk assessment in patient-access areas') considers fire safety in areas of healthcare premises to which patients have access. Where the main purpose of a department is patient treatment or care, the guidance in 'Risk assessment in patient-access areas' should be applied.

Where the main purpose of an area/building on a hospital site is not patient treatment or access (for example main kitchen, stand-alone office block, main laundry), other guides to the Fire Safety Order should be applied.

Note

For fire safety law that applies to buildings to which patients do not have access, see the set of relevant guides on the website of the Department for Communities and Local Government.

Risk assessment in patient-access areas
Fire risk assessment template
Health Technical Memorandum 86 – 'Fire risk assessment in hospitals' (Archive)
'Fire risk assessments in Nucleus hospitals' (Archive)
Regulatory Reform (Fire Safety) Order 2005
Department for Communities and Local Government – Fire Safety Guides

Scope of this manual 2109

This manual describes how the “five-step” approach to fire risk assessment can be applied to complex healthcare premises. Guidance is also given on fire precautions and management measures, and an example of how the fire risk assessment can be recorded is provided.

It considers the full range of factors that affect fire safety in healthcare premises. In addition to the physical fire precautions that may be provided, it also considers:

* fire prevention (to reduce fire hazards and the likelihood of fire);
* those at risk from fire (particularly the dependency of patients);
* management policies and procedures; and
* the availability of sufficient adequately trained staff (to ensure the facilitation of fire safety measures, particularly evacuation procedures).

Use by competent persons 2112

This manual is intended for use by competent persons, as defined in the Fire Safety Order 2005 Pt 2 Article 18(5), but all employers, managers, occupiers, and owners of premises providing healthcare (including private healthcare premises) may find it useful.

It has been written to provide guidance for complex healthcare premises: that is, those providing invasive procedures and other similar treatments which place a dependence on staff for evacuation.

A person who has comprehensive training or experience in fire risk assessment should assess complex healthcare premises. However, this guide can also be used for multi-occupied buildings to address fire safety issues within individual healthcare occupancies.

Where an existing fire risk assessment is being revised, this guide should be used in conjunction with the suite of Firecode documents in making the risk “as low as reasonably practicable” (ALARP).

It may also be useful for:

* estates and fire safety staff;
* other employees;
* employee-elected representatives;
* trade-union-appointed health and safety representatives;
* enforcing authorities;
* all other people who have a role in ensuring fire safety in premises providing healthcare.

Regulatory Reform (Fire Safety) Order 2005

Correlation between Health Technical Memorandum 86 and the five-step risk-assessment process 2115

The table below indicates where the worksheets contained in Health Technical Memorandum 86 most readily correspond to the five-step fire risk assessment process contained in this guidance. Some worksheets address several steps for one aspect. For example, worksheet 5 'Ignition sources – work processes' addresses:

* identification of hazards;
* training of staff; and
* particular hazard areas and additional fire precautions.

In these cases the reference is to the part of the five-step process that is most closely associated with the bulk of the specific guidance in the worksheet. The relevant guidance in the main report is boxed and contains a reference to the appropriate worksheet.

Summary of Health Technical Memorandum 86 fit with respect to the five-step risk assessment process

Health Technical Memorandum 86 worksheet	Steps in Fire Safety Order risk assessment process			
	1 Identify fire hazards	2 Identify people at risk	3 Evaluate, remove, reduce, and protect from risk	4 Record, plan, inform, instruct and train
1 Patients		Mostly	Partly	
2 Ignition sources – smoking			Mostly	
3 Ignition sources – fire started by patients	Mostly		Partly	
4 Ignition sources – arson	Partly		Mostly	
5 Ignition sources – work processes	Mostly		Partly	Partly
6 Ignition sources – fire hazard rooms	Partly		Mostly	
7 Ignition sources – equipment	Partly		Mostly	Partly
8 Ignition sources – non-patient-access areas	Mostly		Partly	
9 Ignition sources – lightning	Partly		Mostly	
10 Combustible material – surface finishes	Partly		Mostly	
11 Combustible material – textiles and furniture	Partly		Mostly	

12 Combustible material – other materials	Partly		Mostly	
13 Prevention – management	Prior to step 1			
14 Prevention – training				All
15 Prevention – fire notices and signs			All	
16 Communications – observation			All	
17 Communications – alarm and detection systems			Partly	
18 Means of escape – single-direction escape			All	
19 Means of escape – travel distance			All	
20 Means of escape – refuge			All	
21 Means of escape – stairways			All	
22 Means of escape – height above ground			All	
23 Means of escape – escape lighting			All	
24 Means of escape – staff			Mostly	Partly
25 Means of escape – escape bed lifts			All	
26 Containment – elements of structure			All	
27 Containment – compartmentation			All	
28 Containment – subdivision of roof and ceiling voids			All	
29 Containment – external-envelope protection			All	
30 Containment – smoke control			All	
31 Extinguishment – manual fire-fighting equipment			All	
32 Extinguishment – access and facilities for fire-and-rescue services			All	

33 Extinguishment – automatic suppression			All	

Health Technical Memorandum 86 – 'Fire risk assessment in hospitals' (Archive)

New healthcare premises 2116

Where the building has been recently constructed or significantly altered, the fire detection and warning arrangements, escape routes and facilities for the fire-and-rescue service should have been designed, constructed and installed in line with current building regulations by following Health Technical Memorandum 81 or its successor Health Technical Memorandum 05-02 – 'Guidance in support of functional provisions for healthcare premises'. In all cases, the principle of maintaining the risk "as low as reasonably practicable" must be maintained in accordance with the finding of the fire risk assessment and all future reviews.

This manual should not be used to design fire safety in new buildings. Where alterations are proposed to existing premises, they may be subject to the Building Regulations and Health Technical Memorandum 05-02. However, this guide can be used to assist in the development of a fire safety strategy for the building.

Health Technical Memorandum 81 – 'Fire precautions in new hospitals' (Archive)
Health Technical Memorandum 05-02 – 'Guidance to support functional provisions in healthcare premises'

Alternative methods of fire risk assessment 2117

This manual does not set prescriptive standards, but provides recommendations and guidance for use when assessing the adequacy of fire precautions in premises providing healthcare. Other fire risk assessment methods may be equally valid to comply with fire safety law.

Glossary of terms 2092

2118

For the purposes of this manual the following terms are defined:

Access room: a room through which the only escape route from an inner room passes.

Air transfer grille (fire & cold smoke): a device that will allow the passage of air in normal use, but when activated will contain both cold smoke and hot gases – usually activated by heat and an electrical interface with the detection and alarm system.

ALARP: as low as reasonably practicable.

Alterations notice: if the premises are considered by the enforcing authority to be high-risk, they may issue an alterations notice, as defined in the Regulatory Reform (Fire Safety) Order 2005 Pt 3 Article 29, which requires the Responsible Person to inform the fire authority before making any material alterations to the premises.

Automatic fire-detection system: a means of automatically detecting the products of a fire and sending a signal to a fire warning system. See **Fire warning system.**

Automatic release mechanism: a device that will automatically release either a locking mechanism on an exit route or a hold-open device to a door or roller shutter. It should operate on the actuation of the fire warning or detection system, or on failure of the power supply, and be able to be manually overridden.

Automatic suppression: mechanical methods of fire suppression which are activated automatically – such systems may include sprinklers and gaseous flooding systems.

Basement: a storey with a floor which at some point is more than 1200 mm below the highest level of ground adjacent to the outside walls.

Cavity barrier: a construction provided to close a concealed space against the penetration of smoke or flame, or provided to restrict the movement of smoke or flame within such a space.

Child: a person who is not over compulsory school age, as construed in accordance with section 8 of the Education Act 1996.

Circulation space: corridors, internal lobbies etc within a department for moving between rooms/spaces within the department. Definition also includes hospital streets, corridors, staircases etc that provide access between departments.

Class 0 surface spread of flame: the classification achieved by a material or composite product which is either:

1. composed throughout of materials of limited combustibility; or
2. a class 1 material (when tested in accordance with BS 476-7:1971 or 1987) which, when tested in accordance with BS 476-6:1981 or 1989, has a fire propagation index (I) of not more than 12 and a subindex (i1) of not more than 6.

Class 0 is not a classification identified in any British Standard test.

Compartment: a building or part of a building, comprising one or more rooms, spaces or storeys, constructed to prevent the spread of fire to or from another part of the same building, or an adjoining building.

Compartment floor: a fire-resisting floor used to separate one fire compartment from another and having a minimum period of resistance of 60 minutes.

Compartment wall: a fire-resisting wall used to separate one fire compartment from another and having a minimum period of resistance of 60 minutes (or 30 minutes in single-storey buildings).

Competent person: a person with enough training and experience or knowledge and other qualities to enable them properly to assist in undertaking the preventive and protective measures.

Complex healthcare premises: hospital or other healthcare premises providing invasive procedures and other similar treatments which place a dependence on staff for evacuation.

Dangerous substance:

1. a substance or preparation which meets the criteria in the approved classification and labelling guide for classification as a substance or preparation which is explosive, oxidising, extremely flammable, highly flammable or flammable, whether or not that substance or preparation is classified under the CHIP Regulations;
2. a substance or preparation that – because of its physico-chemical or chemical properties and the way it is used or is present in or on premises – creates a risk; and
3. any dust, whether in the form of solid particles or fibrous materials or otherwise, which can form an explosive mixture with air or an explosive atmosphere.

Emergency lighting: lighting provided to illuminate escape routes when the normal lighting fails.

Enforcing authority: the fire and rescue authority or any other authority specified in Article 25 of the Regulatory Reform (Fire Safety) Order 2005.

Escape lighting: that part of the emergency lighting which is provided to ensure that the escape routes are illuminated at all material times. (This may be part of the normal lighting system that is maintained on an essential supply.)

Escape route: route forming that part of the means of escape from any point in a building to a final exit.

External escape stair: stair providing an escape route, external to the building.

FA: fire-and-rescue authority.

False alarm: a fire signal, usually from a fire warning system, resulting from a cause other than fire.

Final exit: the termination of an escape route from a building giving direct access to a place of safety outside the building.

Fire-and-smoke damper: fire damper which when tested in accordance with BS EN 1366-2 meets the ES classification requirements defined in BS EN 13501-3:2005 and achieves the same fire resistance in relation to integrity as the element of the building construction through which the duct passes.

Note

Intumescent fire dampers may be tested to ISO 10294-5.

Fire containment air transfer grille: a device that will allow the passage of air in normal use, but when activated will restrict the passage of fire and hot smoke.

Fire damper: mechanical or intumescent device within a duct or ventilation opening which is operated automatically and is designed to prevent the passage of fire and which is capable of achieving an integrity E classification and/or an ES classification to BS EN 13501-3:2005 when tested to BS EN 1366-2:1999.

Note

Intumescent fire dampers may be tested to ISO 10294-5.

Fire door: a door or shutter provided for the passage of persons, air or objects which, together with its frame and furniture as installed in a building, is intended when closed to resist the passage of fire and/or gaseous products of combustion and is capable of meeting specified performance criteria to those ends.

Fire engineering: the application of scientific and engineering principles to the protection of people, property and the environment from fire.

Fire-fighting lift: a lift, designed to have additional protection, with controls that enable it to be used under the direct control of the fire-and-rescue service when fighting a fire.

Fire-fighting shaft: a fire-resisting enclosure containing a fire-fighting stair, fire mains, fire-fighting lobbies and, if provided, a fire-fighting lift.

Fire-fighting stair: a specially protected staircase under the direct control of the fire-and-rescue service capable of use by fire-fighters to facilitate fire-fighting and rescue operations within the building.

Fire hazard: a set of conditions in the operation of a product or system with the potential for initiating a fire.

Fire hazard room: a room or other area which, because of its function and/or contents, presents a greater hazard of fire occurring and developing than elsewhere.

Fire resistance: the ability of an element of building construction, component or structure to fulfil, for a stated period of time, the required load-bearing capacity, fire integrity and/or thermal insulation and/or other expected duty in a standard fire resistance test.

Fire safety manager: a nominated person with responsibility for carrying out day-to-day management of fire safety. (This may or may not be the same as the Responsible Person.)

Fire Safety Order: the Regulatory Reform (Fire Safety) Order 2005.

Fire Safety Order (FSO) Green Guide: the Regulatory Reform (Fire Safety) Order 2005 guide entitled ‘Fire safety risk assessment: healthcare premises’.

Fire safety strategy: a number of planned and coordinated arrangements designed to reduce the risk of fire and to ensure the safety of people if there is a fire.

Fire stop: a seal provided to close an imperfection of fit or design tolerance between elements or components, to restrict the passage of fire and smoke.

Fire warning system: a means of alerting people to the existence of a fire (see **Automatic fire-detection system**).

Hazardous substance: See **Dangerous substance**. A substance subject to the Control of Substances Hazardous to Health Regulations 2002 (COSHH).

Healthcare building: a hospital, treatment centre, health centre, clinic, surgery, walk-in centre or other building where patients are provided with medical care by a clinician.

Height of a building (or storey): the distance from ground level at the lowest side of the building measured to the finished floor level of the top storey.

Highly flammable: generally liquids with a flashpoint of below 21ºC. (The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP) give more detailed guidance.)

Hospital street: a special type of compartment which connects final exits, stairway enclosures and department entrances, and serves as a fire-fighting bridgehead and a safe evacuation route for occupants to parts of the building unaffected by fire.

Inner room: a room from which escape is possible only by passing through another room (the access room).

L1: Type of fire detection and alarm system that is installed throughout all areas of the building. The objective of a category L1 system is to offer the earliest possible warning of fire, so as to achieve the longest available time for escape. (For further guidance, see Health Technical Memorandum 05-03 Part B – 'Fire detection and alarm systems'.)

Licensed premises: any premises that require a licence under any statute to undertake trade or conduct business activities.

Material change: an alteration to a building, process or service, which significantly affects the level of risk to people from a fire in those premises.

Material of limited combustibility: either:

1. a non-combustible material; or
2. any material of density 300 kg/m³ or more which, when tested in accordance with BS 476-11, does not flame, and whose rise in temperature on the furnace thermocouple is not more than 20ºC; or
3. any material with a non-combustible core of 8 mm thickness or more, having combustible facings (on one or both sides) not more than 0.5 mm thick; or
4. any material of density less than 300 kg/m³ which, when tested in accordance with BS 476-11, does not flame for more than ten seconds and whose rise in temperature is not more than 35ºC on the centre (specimen) thermocouple and not more than 25ºC on the furnace thermocouple.

Means of escape: route(s) provided to ensure safe egress from premises or other locations to a place of total safety.

Non-combustible: any material which is capable of satisfying the performance requirements specified in BS 476-4, or any material which when tested in

accordance with BS 476-11 does not flame or cause any rise in temperature on either the centre (specimen) or furnace thermocouple.

Patient-access areas: those areas of the healthcare building to which patients have reasonable access either with or without supervision.

Place of relative safety: a place of temporary safety within a building. This may be an adjoining compartment or subcompartment capable of holding all those threatened, without a significant change in level and from which there is potential for further escape should that become necessary.

Place of safety: a place where persons are in no danger from fire and smoke.

Premises: any place, such as a building and the immediate land bounded by any enclosure of it, any tent, moveable or temporary structure or any installation or workplace.

Progressive horizontal evacuation: an escape strategy that allows the evacuation of patients away from a fire into a fire-free compartment or subcompartment on the same level.

Protected shaft: a shaft that enables persons, air or objects to pass from one compartment to another, and which is enclosed with fire-resisting construction.

Refuge: see **Place of relative safety**.

Relevant boundary:

1. the actual boundary of the premises; or
2. the boundary of the site which the side of the building faces, and which is parallel, or at an angle of not more than 80º, to the side of the building; or
3. the centre line of a road, railway, river or canal which adjoins the actual boundary; or
4. a notional boundary established between buildings, if two or more buildings share the same site.

Relevant persons: any person lawfully on the premises and any person in the immediate vicinity, but does not include fire-fighters carrying out fire-fighting duties.

Responsible person: the person ultimately responsible for fire safety as defined in the Regulatory Reform (Fire Safety) Order 2005.

Self-closing device: a device that is capable of closing the door from any angle and against any latch fitted to the door.

Significant finding: the significant findings of a risk assessment (see 'Statutory requirements' section of this manual).

Staged fire alarm: a fire warning system that can produce a number of staged alarms within a given area (that is, notifying staff, standby to evacuate, full evacuation).

Subcompartments: areas into which the building can be divided to reduce travel distance and which provide 30 minutes' resistance to fire.

Subcompartment wall: a fire-resisting wall used to separate one subcompartment from another and having a minimum period of resistance of 30 minutes.

Travel distance: the actual distance to be travelled by a person from any point within the floor area to the nearest adjoining compartment, subcompartment, escape stairway or external exit, having regard to the layout of walls, partitions, fittings and furniture.

Unprotected area: in relation to a side or external wall of building, this means:

1. a window, door or other opening; and
2. any part of an external wall which has a period of fire resistance less than that required for the elements of structure (integrity and load-bearing capacity only), and which provides less than 15 minutes' fire resistance (insulation); and
3. any part of the external wall which has combustible material more than 1 mm thick attached or applied to its external face, whether for cladding or any other purpose. (Combustible material in this context is a material which is neither "non-combustible" nor a "material of limited combustibility".)

Vision panel: a transparent panel in a wall or door of an inner room enabling the occupant to become aware of a fire in the access area during the early stages.

Way guidance: low-mounted luminous tracks positioned on escape routes in combination with exit indicators, exit marking and intermediate direction indicators along the route, provided for use when the supply to the normal lighting fails, which do not rely on an electrical supply for their luminous output.

Where necessary: the Fire Safety Order 2005 requires that fire precautions (such as fire-fighting equipment, fire detection and warning, and emergency routes and exits) should be provided (and maintained) "where necessary". These are the fire precautions provided (and maintained) to reasonably protect relevant people from risks to them in case of fire. This will be determined by the finding of the risk assessment, including the preventive measures that have or will have been taken. In practice, it is very unlikely that a properly conducted fire risk assessment, which

takes into account all the matters relevant for the safety of people in case of fire, will conclude that no fire precautions (including maintenance) are necessary.

Young person: any person who has not attained the age of 18.

Statutory requirements
Regulatory Reform (Fire Safety) Order 2005
Education Act 1996
Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (the CHIP Regulations)
Control of Substances Hazardous to Health Regulations 2002
Health Technical Memorandum 05-03 Part B – 'Fire detection and alarm systems'

Statutory requirements 2093

Introduction 2119

This section summarises the main statutory requirements of the Fire Safety Order. For more information, see the “FSO Green Guide”.

The Fire Safety Order replaces previous fire safety legislation. Any fire certificate issued under the Fire Precautions Act 1971 will cease to have any effect.

Fire risk assessments under the Fire Precautions (Workplace) Regulations 1997 (as amended 1999) using Health Technical Memorandum 86 will need to be reviewed taking account of the wider scope of the Fire Safety Order.

If the healthcare organisation employs five or more people, the premises are licensed, or an alterations notice requiring the organisation to do so is in force, the significant findings of a risk assessment and the actions taken should be recorded. (For a list of details that should be included in significant findings, see ‘Risk assessment in patient-access areas: Step 4 Record, plan, inform, instruct and train’.)

These findings should be supported by a plan of the premises, indicating the general fire precautions.

Dedicated records (including details of significant findings, any action taken, a copy of the emergency plan, maintenance of fire protection equipment and training) should be kept. An example is provided in ‘Example of recordings of significant findings’.

Healthcare organisations must be able to satisfy the enforcing authority, if called upon to do so, that they have carried out a suitable and sufficient fire risk assessment. Keeping records will help to achieve this and will also form the basis of subsequent reviews. If records are kept, only significant details and any necessary action taken should be recorded.

The Fire Safety Order requires fire precautions to be put in place “where necessary” and to the extent that it is reasonable and practicable in the circumstances of the case.

Responsibility for complying with the Fire Safety Order rests with the “responsible person”. In a workplace, this is the employer and any other person who may have control of any part of the premises (for example the occupier or owner). In all other premises, the person or people in control of the premises will be responsible.

If there is more than one responsible person in any type of premises (for example a multi-occupied complex), all must take all reasonable steps to cooperate and coordinate with each other.

Step 4: Record, plan, inform, instruct and train
Example of recording of significant findings
Regulatory Reform (Fire Safety) Order 2005
Health Technical Memorandum 86 – 'Fire risk assessment in hospitals' (Archive)

Compliance monitoring by fire authorities 2120

All fire authorities (FAs) in England and Wales have a statutory duty to enforce the provisions of the Fire Safety Order.

The Fire Safety Order has moved fire safety law from the prescriptive approach of fire certificates (whereby enforcing authorities directed requirements) to a risk-based regime where responsibility for ensuring compliance clearly rests with those generating and managing the risk – the responsible person. The FA's principal role is to monitor compliance by ensuring that a suitable and sufficient fire risk assessment has been undertaken in the premises to which the Fire Safety Order applies.

The Department for Communities and Local Government (DCLG) has issued fire safety risk assessment guidance for responsible persons, which provides recommendations and guidance (benchmarks) for use when assessing the adequacy of fire precautions in premises subject to the Fire Safety Order (see 'Fire safety law and guidance documents for business').

This manual is considered by the Chief Fire Officers' Association (CFOA) to be an equally valid method to comply with fire safety law. However, it should be borne in mind that this is one of a suite of guidance documents and it should be read/ applied in conjunction with other relevant Health Technical Memoranda and operational manuals.

DCLG has published the Fire and Rescue Service National Framework, setting out priorities for FAs with the aim of promoting public safety and the economy, efficiency and effectiveness of authorities and their functions (see 'The Fire and Rescue Service National Framework'). This framework indicates that authorities must have a fire safety audit and inspection programme forming part of its integrated risk management plan (IRMP).

FAs are expected to operate a risk-based enforcement programme directing resources to those places that pose a significant risk to life. Hospitals are in the highest risk category; consequently, they will attract regular audit and inspections.

Fire-and-rescue services in England and Wales have adopted a data-gathering and fire safety audit process that has been agreed with DCLG to ensure a consistent approach to risk categorisation and enforcement.

This process is supported by several fire safety directives published by CFOA for FAs to adapt or adopt.

These directives cover all aspects of enforcement, audit and administration, and were produced by the National CFOA Regulatory Reform Fire Safety Order Working Group prior to the introduction of the Fire Safety Order. Further information is available at the CFOA website.

Compliance code

The enforcement policy is based on the principles of the compliance code to which all FAs are signatories. The CFOA directive has adopted and adapted the enforcement management model (EMM) used by the Health and Safety Executive and local authority enforcers. The EMM provides a framework to help inspectors make enforcement decisions in line with best practice, promoting consistent application by fire safety enforcement officers. This is not a procedure in its own right but captures the issues that inspectors consider when exercising their professional judgement, and it reflects the process by which enforcement decisions are reached.

The EMM is a key tool to determine appropriate enforcement action, be it formal or informal action. Where there is no excessive risk and the residual risk is being adequately managed (often by provision of agreed interim measures), a partnership approach is encouraged.

Note

The compliance code is an agreement between business and government on good enforcement in respect to fire safety law. It encourages enforcing authorities to be helpful, to actively work with businesses, especially small and medium-sized businesses, to advise on and to assist with compliance where appropriate.

Regulatory Reform (Fire Safety) Order 2005
Fire safety law and guidance documents for business
The Fire and Rescue Service National Framework
CFOA

Unwanted fire signals (UwFS) 2123

Many hospital premises have significant numbers of unwanted fire signals from automatic fire-detection systems. FAs are increasingly recognising that this may be evidence of non-compliance with the requirements of the Fire Safety Order in that it may be an indication that:

* the fire warning system is not fit for purpose (standard and design); or
* the premises and/or system are not being adequately managed and maintained.

'Reducing false alarms in healthcare premises' gives guidance on reducing UwFS and should be referred to in consultation with the FA.

Many FAs are taking a firmer line with regard to dealing with premises with high numbers of UwFS in terms of both fire safety enforcement and operational-response options. Consequently, this may be an additional reason for hospital premises to attract audit, inspection or even enforcement action by FAs.

These unwanted calls cause a significant impact and burden on hospital services, the community and the FAs, and should therefore be minimised. If healthcare organisations fail to act to reduce UwFS, the FA may require local assessment of an actuation of the fire alarm before a call is placed to the FA.

'Reducing false alarms in healthcare premises'

"As low as reasonably practicable" (ALARP) 2124

When assessing the adequacy of fire precautions in premises and compliance with the Fire Safety Order, a key concept is ALARP. This is defined in the DCLG guides:

[ALARP] "Is a concept where risks should continue to be reduced until you reach a point where the cost and effort to reduce the risk further would be grossly disproportionate to the benefit achieved."

This is in line with health and safety guidance, which is well-established and is generally based on "good practice". Further information is available from the Health & Safety Executive.

Health Technical Memorandum 05-03 Part B – 'Fire detection and alarm systems' specifies an L1 standard (L2 for treatment centres) for automatic fire detection and alarms. The provision of automatic detection as a compensating feature for another deficiency in general fire precautions is unacceptable.

FAs accept that the provision of L1 systems is best practice, to be attained within a time period agreed with the FA, and in premises whose fire risk assessment has found a need for improved protection (for example in some older premises).

The benefits of automatic detection – in providing an early warning of fire to allow the early evacuation of patients, public and staff before being affected – is well-established and clearly outweighs the cost and inconvenience of retrofitting. When making a decision around ALARP, the benefits and whether the cost is grossly disproportionate should be considered.

When a significant fire risk is identified, an action plan with appropriate timescales must be put in place by the responsible person and be agreed with the FA. The onus is on the responsible person to demonstrate what is not "reasonably practicable" (Article 34 of the Fire Safety Order).

When FAs are assessing the adequacy of the proposed automatic fire detection and taking decisions as to the appropriate level of enforcement action and timescales, they will consider all relevant issues such as the standard of all other general fire precautions and management (for example sprinklers or subcompartmentation).

Health & Safety Executive (HSE)
Health Technical Memorandum 05-03 Part B – 'Fire detection and alarm systems'
Regulatory Reform (Fire Safety) Order 2005

Detection of fire by observation and by automatic fire-detection systems 2125

The early detection of fire by people is probably the best form of detection, and the design and layout of many healthcare premises make a positive contribution to fire safety in this way. Healthcare fire statistics indicate that almost 70% of fires in hospitals are detected by staff, patients or visitors.

In a hospital or treatment centre, the most important aspect is the number of beds/ trolleys visible from the staff base, which is the base from which all staff work and where information is stored and exchanged. Although it is unlikely that the staff base will be permanently staffed, a location that provides good observation will improve the likelihood of a fire being detected at an early stage and enable a more effective filtering out of obvious false alarms.

For most ward layouts, staff are normally in a position to detect a fire early in its development approximately 90% of the time. For some ward layouts, where all the patient accommodation is in single rooms, the probability that staff can detect a fire early in its development is reduced. In these cases, the installation of an automatic fire detection and alarm system should be given a high priority. In planning the installation of a fire-detection system, consideration will need to be given to the provision of care in other accommodation when the system is being installed.

Where a ward layout facilitates a high degree of observation, the installation of an automatic fire detection and alarm system may be a lower priority, but must be installed within a time-frame agreed with the FA.

Staircases 2126

In some older hospital premises, the number of staircases may be inadequate or not as wide as current Health Technical Memoranda or Approved Document B – 'Fire safety' standards require. In these instances, the cost of providing new and/or additional staircases would often be disproportionate to the benefits. In such circumstances, a suitable and sufficient fire risk assessment may show that provision of additional subcompartmentation, additional staff and staff training provides an equivalent level of safety for the occupants (each will be treated on its own merits).

Enforcement action 2127

The preferred form of enforcement action by FAs in hospital premises (providing the responsible person is cooperative and making reasonable efforts to comply) is by way of an agreed action plan (see the CFOA directive link below); however, if the residual risk is excessive, a formal enforcement notice may be issued.

FAs will discuss enforcement action with responsible persons and consider their views and attitudes prior to doing so. Consequently, if an FA is considering serving a formal enforcement notice and the technical solution cannot be agreed, the responsible person with the agreement of the FA may seek a determination (judgement) from the Secretary of State.

See Article 36 of the Fire Safety Order, and Regulatory Reform (Fire Safety) Order 2005 Guidance Note 2 on “Determination of disputes by the Secretary of State” (see link below).

However, if the responsible person or the FA do not think a determination is an appropriate route of appeal, a formal appeal should be made to a magistrate within 21 days of the issue of the notice.

Every effort should have been made by those involved with the audit process, prior to the issue of the enforcement notice, to agree on the works required within the notice to ensure fire safety is to the required standard(s). This may involve full discussion with senior managers of both organisations at an early stage, preferably before the issue of the enforcement notice. If such discussion takes place after the issue of the enforcement notice, it should take place as soon as possible and in time to allow the responsible person to have recourse to court should this informal approach fail.

If an agreed action plan with the responsible person by the FA is not complied with, formal action would normally be taken by the issue of an enforcement notice and ultimately – if the enforcement notice is not complied with – prosecution.

If the hospital is planned for replacement, timescales should be taken into account. In the case of relatively short periods, such as two years, interim measures may be acceptable to reduce significant expenditure, but where the time periods are longer, it is unlikely that interim measures will be acceptable.

CFOA
Regulatory Reform (Fire Safety) Order 2005
Guidance Note 2 determination 2005

Fire safety audit process 2128

The initial data-gathering and audit process by FAs, particularly in the first instance, consists of a number of phases:

* Audit arranged with the relevant responsible person (normally one month prior).
* Data-gathering implemented.
* Audit of risk assessment, systems, procedures, records and responsible person compliance against each specific duty (Articles) under the Fire Safety Order.
* Validation of the above (by inspection) – this could be all of the premises or only key elements.
* Assessment of the compliance level and calculation of the risk rating.
* Audit and inspection outcome, and feedback (for example, whether it is satisfactory or it requires some form of enforcement action, which may be formal or informal (including education and advice)).
* Follow-up inspection, if necessary.
* Scheduling of the next fire safety audit, depending on the level of compliance and premises risk.

Hospitals seldom comprise only one building. Consequently, the inspecting officer will normally first establish which buildings and premises are separate and will then determine which to audit and inspect.

Many premises on hospital sites contain support services that are comparatively lower-risk and may not attract the same attention as those premises providing patient care. Further information can be found on the CFOA website.

It should be noted that other types of audit and inspection may be undertaken by fire safety inspectors (for example in response to complaints, UwFS or specific inspections). Additionally, operational fire-fighters may visit hospitals primarily to gather operational intelligence to prepare and plan for incidents under the Fire and Rescue Services Act 2004. Some FAs use operational crews to undertake fire safety visits of lower-risk premises (such as offices) on hospital sites.

Note

Authorised fire authority fire safety inspectors will not undertake fire risk assessments on behalf of the responsible person.

Regulatory Reform (Fire Safety) Order 2005
CFOA
Fire and Rescue Services Act 2004

Assessment areas 2094

2154

To assess the fire hazards and people at risk and to evaluate the fire risk, the healthcare premises under consideration should be divided into a series of assessment areas. The boundaries of these assessment areas could be determined by the functional layout of the healthcare premises; normally each nursing and/or other management unit will be an assessment area.

Assessment areas may consist of more than one fire compartment, but the boundaries of the assessment area should be compartment walls and floors or sub-compartments.

Assessment areas that contain “very high dependency” patients (see ‘Risk assessment in patient-access areas – Step 2’) should always be enclosed by compartment walls.

Assessment areas will not normally cover more than one floor, but may do so where a single nursing or management unit incorporates two different functions on different floors (for example sleeping areas and day spaces on separate storeys).

Escape routes from the assessment area should be included in the assessment. The escape route may include circulation spaces, stairways, escape bed lifts, the potential for refuge in adjacent areas on the same level, escape to ground level, and final escape to a place of safety.

Assessments should be made of the healthcare premises in operation. It is not possible for an assessment to be wholly complete before occupation.

An assessment is dependent on many factors, including fire hazards, people at risk, building layout, physical fire precautions, staffing and management. A change in any of these will require a review and revision of the fire risk assessment. Non-patient-access areas of healthcare premises (particularly hospitals) which can present a hazard due to fires starting outside the assessment area (see ‘Risk assessment in patient-access areas – Step 1’) should not be in the same compartment as the assessment area.

Having divided the healthcare premises into a number of assessment areas, it is then possible to undertake the fire risk assessment.

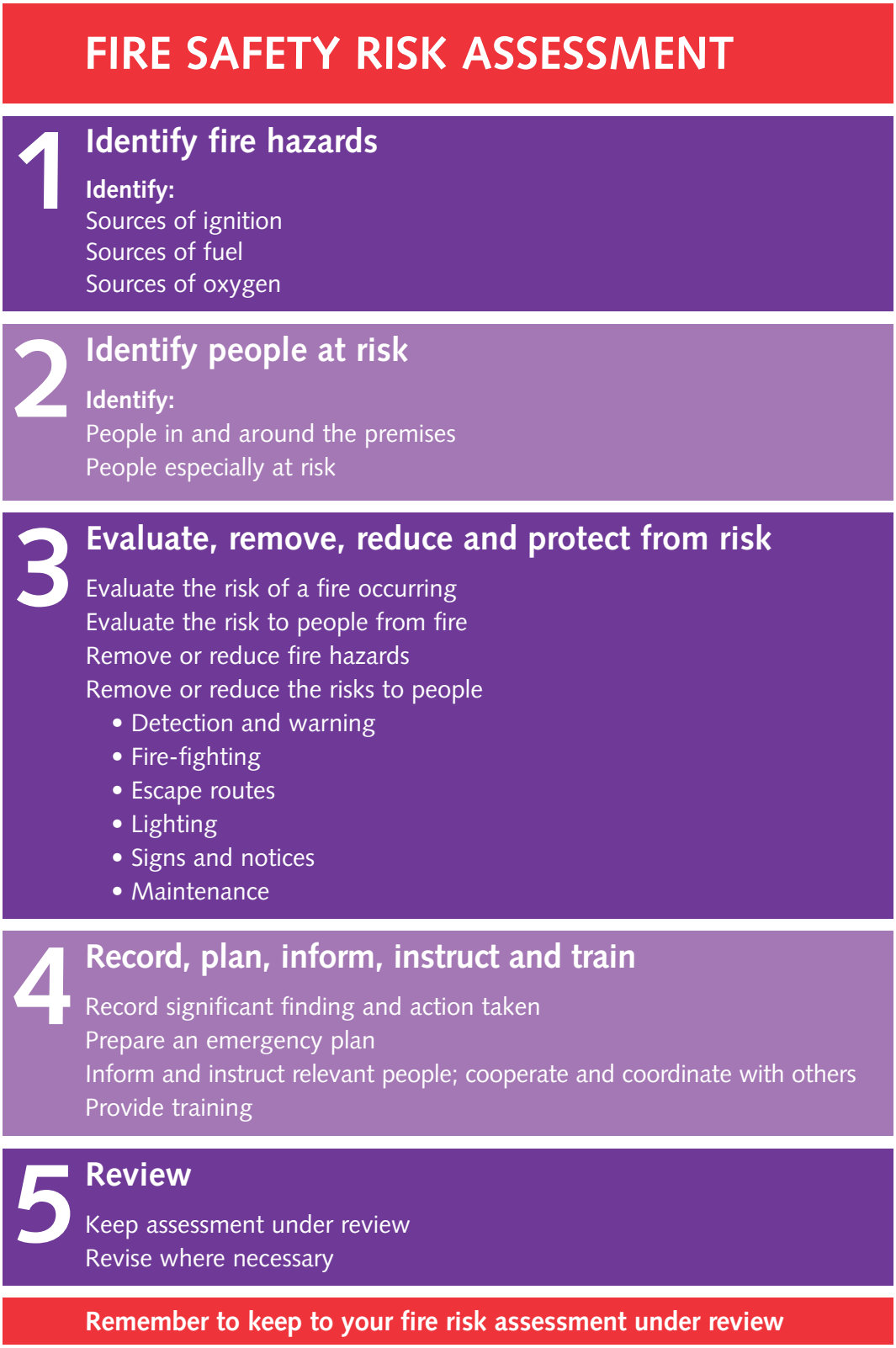
The ‘Risk assessment in patient-access areas’ section of this manual covers patient-access areas (for example wards, out-patient departments, A&E, theatres) and associated non-patient-access areas (for example laundry, main kitchens, offices).

Risk assessment in patient-access areas

Risk assessment in patient-access areas 2095

Introduction 2156

This guidance adopts the five-step fire risk assessment process used in the “FSO Green Guide”. The correlation table in ‘Introduction and scope’ indicates where the worksheets contained in Health Technical Memorandum 86 most readily correspond to the five-step fire risk assessment process contained in this guidance. The results of each assessment area should be recorded on separate assessment forms.



The five steps of a fire risk assessment

This section highlights which parts of the fire risk assessment process NHS organisations may have to undertake for the first time and which parts can, after

review, build on existing fire risk assessments. For example, worksheets relating to the identification of hazards will now incorporate the philosophy used in the “FSO Green Guide”, which requires fire risks to be “as low as reasonably practicable” (ALARP) with a greater emphasis on the prevention of fires.

This section also highlights those tasks that NHS organisations should undertake after they have assessed their fire risks.

Patient-access areas are those areas of healthcare premises to which patients have access either with or without supervision and either as in-patients or as out-patients. They include all areas containing escape routes used by patients.

Commercial enterprises within hospital premises, which may be frequented by patients, are considered in Operational provisions manual Part D – 'Commercial enterprises in healthcare premises’ and in the relevant guide to the Fire Safety Order (see 'Communities – Fire safety law/aboutguides').

Introduction and scope
Part D: Commercial enterprises on healthcare premises
Health Technical Memorandum 86 – Fire risk assessment in hospitals (Archive)
Communities – Fire safety law/aboutguides

Managing fire safety 2160

Good management of fire safety (see Health Technical Memorandum 05-01 – ‘Managing healthcare fire safety’) is essential to ensure that fires are unlikely to occur. However, if they do occur, they must be rapidly detected and extinguished or contained. If a fire does develop, everyone in the premises should be able to escape to a place of safety in accordance with the fire safety strategy outlined in Health Technical Memorandum 05-01, Chapters 5–7. (See also the “FSO Green Guide”.)

Chief executives of trusts should develop an adequate fire strategy to:

* ensure that their management policies regarding fire safety comply with the relevant guidance in Health Technical Memorandum 05-01;
* ensure that sufficient and adequately trained staff are available at all material times (day and/or night) to provide for the safe evacuation of patients from the assessment area, in accordance with the emergency evacuation plan (see step 4);
* maintain an up-to-date set of drawings showing the assessment areas, which should indicate:

– alarm and detection systems;
– means of escape;
– compartmentation;
– first-aid fire-fighting equipment; and
– access and facilities for fire-and-rescue services;

* keep up-to-date records for a minimum of three years of all maintenance work, instruction and training, and fire drills. Records should be included for:

– means for detecting and giving warning in the event of fire;
– means for fighting fire;
– automatic fire-suppression systems;
– any smoke-management, smoke-control or smoke-venting systems;
– escape lighting systems;
– fire doors and fire-exit doors;
– instruction and training; and
– fire drills.

Records should include:

* the date on which the testing and maintenance was carried out and by whom;
* the date on which any defects were reported and the action taken to remedy such defects; and
* the date on which the defect was remedied and by whom.

Further information on managing fire safety is available in Health Technical Memorandum 05-01.

Health Technical Memorandum 05-01 – ‘Managing healthcare fire safety’

Step 1: Identifying fire hazards 2168

Introduction 2169

For a fire to start, three elements are needed:

* a source of ignition;
* fuel; and
* oxygen.

Identify sources of ignition 2170

Sources could include:

* arson (for example by patients who suffer from mental illness);
* smoking materials (for example cigarettes, matches and lighters);
* naked flames (for example matches, candles or gas- or liquid-fuelled open-flame equipment);
* electrical, gas- or oil-fired heaters (fixed or portable);
* cooking equipment;
* faulty or misused electrical equipment;
* lighting equipment;
* hot surfaces and obstruction of equipment ventilation;
* hot processes (for example welding by contractors);
* other work processes;
* lightning; and
* chemicals used for cleaning, laundering and some clinical processes.

Fires may be started by patients, either accidentally or deliberately, and particularly by:

* patients with mental health problems;
* older people;
* people with learning disabilities;
* young people with disabilities.

Indications of “near-misses”, such as scorch marks on furniture or fittings, discoloured or charred electrical plugs and sockets, cigarette burns etc can help to identify hazards that may not otherwise be noticed.

Fire hazard rooms

Certain rooms within patient-access areas of healthcare premises constitute a particular fire hazard. These are known as “fire hazard rooms” and may include:

* chemical stores;

* cleaners' rooms;
* linen stores;
* clothes storage;
* dayrooms;
* disposal rooms;
* laboratories;
* lift-motor rooms;
* patient bedrooms provided for:
  - older people;
  - people with mental health problems;
  - people with learning disabilities;
* relatives' overnight accommodation;
* staff changing rooms;
* storerooms;
* ward/residential/staff kitchens;
* X-ray film and record stores;
* all rooms within the main laundry in which delivery, sorting, processing and packing and storing are carried out.

Non-patient-access areas

Non-patient-access areas of healthcare premises (particularly hospitals) can present a hazard to patient-access areas due to fires starting outside the assessment area, for example:

* boilerhouses;
* sterile services departments;
* central staff changing;
* flammable stores;
* laundries;
* main electrical gear;
* main kitchens;
* main stores;
* medical gas stores;
* medical records;
* pathology departments;
* patient services;
* pharmaceutical (manufacturing) areas;
* waste collection/disposal areas, incineration works.

Identify sources of fuel 2172

Some of the most common fuels found in premises providing healthcare are:

* laundry supplies (such as bedding and towels) and medical supplies (such as disposable aprons);
* toiletries, aerosols, wall and ceiling hangings, and linings;

* plastics, rubber (for example soft play or restraint areas), video tapes and polyurethane;
* foam-filled furniture, foam-filled mats and polystyrene-based display materials;
* wood or wood-based furniture, textiles and soft furnishings (such as spare clothes and hanging curtains);
* clothing, private belongings (such as toys), and seasonal and religious-occasion decorations (such as Christmas decorations);
* flammable products (such as cleaning and decorating products, petrol, white spirit, methylated spirit, cooking oils, disposable cigarette lighters, and hand-sanitising solutions);
* flammable gases such as liquefied petroleum gas (LPG), including aerosol canisters; and
* waste products, particularly finely divided items such as shredded paper and wood shavings, off-cuts and dust.

Physiotherapy departments and X-ray departments (particularly film storage) can present a significant source of flammable material.

Consideration should be given to the materials used to line walls and ceilings (for example murals, materials used for hospital art projects, and noticeboards) and how they might contribute to the spread of fire.

Identify sources of oxygen 2174

In addition to medical gas pipeline systems and cylinders (see Health Technical Memorandum 02-01 – ‘Medical gas pipeline systems’), sources of oxygen can sometimes be found in materials used or stored at premises, such as:

* some chemicals (oxidising materials), which can provide a fire with additional oxygen and so help it to burn. These chemicals should be identified on their container (and Control of Substances Hazardous to Health (COSHH) data sheet) by the manufacturer or supplier, who can advise as to their safe use and storage; or
* oxygen supplies from cylinder storage and piped systems (for example medical oxygen and oxygen used by contractors such as in welding processes).

Health Technical Memorandum 02-01 – ‘Medical gas pipeline systems’
Control of Substances Hazardous to Health Regulations (COSHH) 2002

Step 2: Identifying people at risk 2175

Introduction 2176

All people who are likely to use the premises should be considered, but particular attention should be paid to people who may be especially at risk, such as:

* employees who work alone, either regularly or at specific times and/or in isolated areas – especially at night (for example cleaners, security staff, maintenance staff, nursing staff and care staff);
* people who are unfamiliar with the premises (for example agency or temporary staff, guests, visitors (including visiting medical or social care staff) and contractors);
* patients who are unable to escape unaided (young children, babies, older people, physically disabled people (in particular people with mobility impairment), mentally disabled people, people with vision or hearing impairment, those with some other sensory impairment, and those whose ability to escape unassisted is impaired due to their medical condition or medication, or who may be intoxicated);
* people who are not able to leave the premises quickly, but who do not require assistance (for example older patients or visitors who have limited disabilities);
* parents with children;
* people with language difficulties; or
* other persons in the immediate vicinity of the premises.

The risk assessment should take into account the patient's medical conditions, sensory awareness and mobility. In complex healthcare premises providing services for patients with very high dependency (such as those in critical care areas, special care baby units, operating theatres or those suffering from mental illness) or disabled people, it may also be necessary to seek expert advice of another competent person (for example clinical staff).

Dependency of patients 2177

For the purposes of this document, occupants are classified as independent (including patients), dependent or very high dependency (these latter two terms refer to patients only), based upon a broad consideration of their anticipated mobility and/or dependence. The categories differentiate between the anticipated dependence of various occupants, either during an evacuation or as a consequence of the treatment they are receiving.

Independent

Patients will be defined as being independent if their mobility is not impaired in any way and they are able to physically leave the premises without staff assistance, or if they experience some mobility impairment and rely on another person to offer minimal assistance. This would include being sufficiently able to negotiate stairs unaided or with minimal assistance, as well as being able to comprehend the emergency wayfinding signage around the facility.

Dependent

Patients who are classed as neither “independent” nor “very high dependency” are classed as dependent patients.

Very high dependency

Patients with very high dependency are those whose clinical treatment and/or condition creates a high dependency on staff. This will include those in critical care areas, operating theatres and those where evacuation would prove potentially life-threatening.

Assessment areas will include a mix of people with a range of dependencies. Some will be able to escape without assistance; others will require considerable extra help to do so.

Any assessment will need to be based on the clinical dependency/care needs of the majority, but it must also take into account any individuals at risk, such as those listed at the start of Step 2.

Step 3: Evaluate, remove, reduce and protect from risk 2178

Introduction 2179

The management of the premises and the way people use them will have an effect on the evaluation of risk.

To maintain a pleasant healing environment and non-institutional atmosphere, precautions should be introduced carefully, taking account of any possible adverse effects on the quality of service-users' lives and the care they receive, without compromising the safety of the occupants in case of fire.

Evaluate the risk of a fire occurring 2180

The chances of a fire starting will be low if the premises are well-managed and have limited ignition sources that are kept well away from combustible materials. In general, fires start in one of three ways:

* **accidentally**, such as when smoking materials are not properly extinguished or when lighting displays are knocked over;
* **by defect, act or omission**, such as when electrical office equipment is not properly maintained or when waste packaging is allowed to accumulate near a heat source; or
* **deliberately**, such as an arson attack where external waste receptacles placed too close to the building have been set on fire (see Operational provisions manual Part F – 'Arson prevention in NHS premises' for further guidance).

It is important to:

* look critically at the premises and try to identify any incident waiting to happen and any acts or omissions which might allow a fire to start;
* investigate previous fire history and reported near misses;
* look for any situation that may present an opportunity for an arsonist.

Part F: Arson prevention in NHS premises

Evaluate the risk to people 2181

It is essential that the means of escape and other fire precautions are adequate to ensure that everyone can make their escape to a place of total safety before the fire and its effects can trap them in the building.

In evaluating this risk to people, situations such as the following should be considered:

* Fire starting on a lower floor affecting the escape routes for people on upper floors or the only escape route for people with disabilities.
* Fire developing in an unoccupied space that people have to pass by to escape from the building.
* Fire or smoke spreading through a building – affecting people in remote areas – via routes such as vertical shafts, service ducts, ventilation systems, poorly installed, poorly maintained or damaged walls, and partitions and ceilings.
* Where ventilation systems might assist the spread of flames, smoke and hot gases from a fire, it will be necessary to take steps to safeguard the means of escape against this hazard. Ventilation ducts should be fitted with fire dampers (which close on actuation of the fire alarm) where they cross compartment boundaries (walls or floors). In subcompartment walls, dampers which operate on fusible links may be used. (Further information can be found in Health Technical Memorandum 05-02.) In some premises, the dirty extract may continue to operate after the activation of the alarm, where it flows directly out of the building.
* Fire and smoke spreading through a building due to poor installation of fire precautions (for example incorrectly installed fire doors or incorrectly installed services penetrating fire walls).
* Fire and smoke spreading through the building due to poorly maintained and damaged fire doors or fire doors being wedged open.

Particular consideration should be given to fires that may start in non-patient-access areas, which affect adjacent patient-access areas.

With the exception of fire doors to mental health patients' bedrooms, all fire-resisting doors – other than those to locked cupboards and service ducts – should normally be fitted with:

* an appropriately controlled self-closing device (with an automatic hold-open device if necessary); or
* a free-swing controlled door-closing device that will close the door from any angle on operation of the fire alarm or automatic fire-detection system.

Any other variation must be justified within the fire risk assessment.

Note

Additional nursing arrangements may be necessary in mental health accommodation (for example constant observation for mental health patients with high-risk emotional and behavioural difficulties such as self-harm, arson etc);

within these arrangements, control measures might include higher levels of training, staff etc.

Where self-closing devices are not fitted to fire doors, this should be taken into account in the ward's fire safety management procedures. Further guidance can be found in Health Technical Memorandum 05-01 and Appendix B2 of the "FSO Green Guide".

For occupants with very high dependency (see Step 2), the provision of additional fire precautions should be considered, such as:

* visual observation;
* lower travel distance;
* increased refuge;
* lower height above ground;
* higher numbers of staff;
* escape bed lifts; and
* automatic suppression systems (for example sprinklers).

Step 2: Identifying people at risk
Health Technical Memorandum 05-02 – 'Guidance in support of functional provisions for healthcare premises'
Health Technical Memorandum 05-01 'Managing healthcare fire safety'
Fire Safety Order Risk Assessment Guide – Healthcare Premises

Remove or reduce the hazards 2183

Having identified the fire hazards in Step 1, healthcare organisations should remove those hazards if it is reasonably practicable to do so. If they cannot be removed, reasonable steps should be taken to reduce them. This is an essential part of fire risk assessment and, as a priority, this must take place before any other actions. It is important to make sure that any actions taken to remove or reduce fire hazards or risk are not substituted by other hazards or risks.

Step 1: Identifying fire hazards

Remove or reduce sources of ignition 2184

The first option should always be the removal of the ignition source; however, if that is not feasible, there are various ways to reduce the risk caused by potential sources of ignition, for example:

* Wherever possible, replace a potential source by a safer alternative.
* Replace naked-flame and radiant heaters with fixed convector heaters or a central heating system. Restrict the movement of, and guard, portable heating appliances.

* Ensure that electrical, mechanical and gas equipment is installed, used, maintained and protected in accordance with the manufacturer's instructions.
* Safe systems of work should be established, adhered to and periodically re-evaluated (see also Operational provisions manual Part A – 'General fire safety' for more information on the reduction of fire hazards and general fire precautions).
* Take precautions to avoid arson. Arson should be addressed in the fire safety and waste management policies for the healthcare premises (see Health Technical Memorandum 05-01). Guidance on the prevention of arson is available in Operational provisions manual Part F – 'Arson prevention in NHS premises' and includes:
  - site access;
  - building access;
  - design of staff circulation routes to increase passive surveillance;
  - the reduction of unfrequented areas;
  - use of CCTV and specialist staff;
  - restricted access to sensitive areas (stores, plantrooms etc) and to disused (or derelict) buildings.
* A permit-to-work system should be in place to ensure that:
  - all areas where hot work (for example welding) has been carried out are checked to confirm that no ignition has taken place and no smouldering materials remain;
  - sources of ignition such as blow-lamps or hot-air guns are not used when work is carried out on gas fittings, which involves exposing pipes that contain or have contained flammable gas.
* Healthcare premises should have adequate protection from lightning. BS EN 62305-1–4 give guidance on the design of systems for the protection of structures against lightning. Specialist advice from a suitably qualified person or installer should be sought. All lightning protection systems should be visually inspected once in every 12-month period by a suitably qualified person, and a record of inspections kept.

Part A: General fire safety
Part F: Arson prevention in NHS premises
Health Technical Memorandum 05-01 – 'Managing healthcare fire safety'

Remove or reduce sources of fuel 2185

The first option should always be the removal of the fuel; however, if that is not feasible, there are various ways to reduce the risks caused by materials and substances that burn, for example:

* Remove or treat large areas of highly combustible wall and ceiling linings (for example polystyrene or carpet tiles) to reduce the rate of flame spread across the surface.
* Reduce waste and flammable materials, liquids and gases in all areas to a minimum. Keep remaining stock in dedicated storerooms or storage areas – preferably outside, where only authorised staff are allowed – and only store the minimum required for the operation of the premises.
* Ensure that flammable materials, liquids and gases are kept to a minimum and are stored properly with adequate separation distances between them.
* Do not keep incompatible flammable materials together.
* Develop a formal system for the control of combustible waste (including toxic and contaminated waste) by ensuring that waste materials and rubbish are not allowed to build up and are carefully stored until properly disposed of, particularly at the end of the day.
* Main medical gas stores should always be located in separate buildings (see Health Technical Memorandum 02-01 for more guidance).
* Take action to avoid any parts of the premises, and in particular storage areas, being vulnerable to arson or vandalism.
* Textiles and furniture can present a significant fire hazard. In patient-access areas, textiles and furniture should comply with the guidance in Health Technical Memorandum 05-03 Part C – ‘Textiles and furnishings’.

Other materials

Further guidance on the reduction of fire hazards from other materials can be found in Operational provisions manual Part A – 'General fire safety'. Other materials can include:

* aerosol sprays;
* flammable liquids;
* medical gases;
* LPGs;
* disposable goods and packaging made from paper, plastic and expanded foam;
* combustible waste.

This list is not definitive, and other combustible materials may be present in patient/resident access areas of healthcare premises.

Part A: General fire safety
Health Technical Memorandum 02-01 – 'Medical gas pipeline systems'
Health Technical Memorandum 05-03 Part C – ‘Textiles and furnishings’

Remove or reduce sources of oxygen 2187

Reduce the potential source of oxygen supplied to a fire by:

* closing all doors, windows and other openings not required for ventilation;
* shutting down ventilation systems that are not essential to the function of the premises;
* not storing oxidising materials near, or with, any heat source or flammable materials;
* controlling the use and storage of oxygen cylinders and/or piped oxygen, ensuring that they are not leaking;
* maintaining piped oxygen supplies in accordance with the manufacturer's instructions; and
* ensuring that shut-off valves for use in an emergency are available and located such that they are easily accessible in the event of a fire and that staff are trained in their use (cross-reference should be made to the healthcare organisation's medical gases policy).

Flexibility of fire protection measures 2188

Flexibility will be required when applying this guidance; the level of fire protection should be proportional to the risk posed to the safety of the people in the premises. Therefore, the objective should be to reduce the remaining risk to a level as low as reasonably practicable. The higher the risk of fire and risk to life, the higher the standards of fire protection will need to be. However, the risk should be reduced to as low as possible before putting in place additional fire protection measures.

Fire detection and warning systems 2189

All complex healthcare premises will need some form of system for detecting fire and warning the occupants. Staff and/or automatic fire-detection and warning systems can provide detection and warning of fire. Current guidance for new hospitals recommends an L1 detection and alarm system. Treatment centres should be protected to an L2 standard. Older hospitals may not achieve this standard of detection and alarm. Therefore, as part of future refurbishment or upgrading of fire precautions, this lower standard should be improved within a time period agreed with the FA.

Fire detection and alarm systems

Any fire detection and alarm systems should comply with Health Technical Memorandum 05-03 Part B – 'Fire detection and alarm systems', which provides general principles and technology guidance on the design, specification, installation, commissioning, testing, operation and maintenance of fire-alarm systems in healthcare premises. It should be read in conjunction with BS 5839-1.

False alarms from fire warning systems are a major problem and result in many unwanted calls to the fire-and-rescue service every year. To help reduce the

number of false alarms, the design and location of activation devices should be reviewed against the way the premises are currently used (see Operational provisions manual Part H: 'Reducing false alarms in healthcare premises').

Part H: Reducing false alarms in healthcare premises
Health Technical Memorandum 05-03 Part B – 'Fire detection and alarm systems'

Fire-fighting equipment and facilities 2191

Extinguishers should primarily be used to protect life and facilitate safe escape.

People with no training (for example visitors and members of the public) should not be expected to attempt to extinguish a fire. However, all staff should be familiar with the location and basic operating procedures for the equipment provided, in case they need to use it. If the fire strategy means that certain people, for example fire marshals, will be expected to take a more active role, they should be provided with more comprehensive training.

Other fixed installations and facilities, such as dry rising mains, access for fire-and-rescue-service vehicles or automatically-operated fixed fire-suppression systems (for example sprinklers and gas or foam flooding systems), may also have been provided. Where provided, such equipment and facilities must be maintained.

Manual fire-fighting equipment

Hand-held extinguishers, fire blankets and hose reels should be provided as necessary. Portable extinguishers should comply with BS EN 3 parts 3, 6 and 7 and should be inspected and maintained in accordance with BS 5306-3. Hose-reel installations should conform to the relevant section of BS 5306-1.

Generally, there should be one 13A-rated extinguisher for every 200 m², or part thereof, or at least two extinguishers per floor. Extinguishers using carbon dioxide or other media should be provided as required. Fire blankets should be provided in all cooking and pantry areas. Guidance on the means of extinguishing various classes of fire is provided in Operational provisions manual Part A – 'General fire safety'.

Sprinklers

Fire safety in healthcare premises does not normally require the installation of any form of automatic suppression system such as sprinklers; however, it may be present for a range of reasons including:

* the facilitation of delayed evacuation;
* property protection;
* business/service continuity where the facility provides specialist services (for example a regional cancer centre); and
* part of a fire-engineered solution.

Automatic fire-suppression systems will normally form part of a fire-engineering solution and may mitigate some of the risks associated with:

* dependent and very high dependency patients;
* lack of fire-resisting construction around fire hazard rooms;
* poor levels of observation;
* reduced fire protection to elements of structure; or
* insufficient external-envelope protection.

The installation of life-safety automatic fire-suppression systems (normally sprinklers) should be considered in all new healthcare premises (see paragraph 6.94 of Health Technical Memorandum 05-02). Where the premises provide specialist care, for example a regional cancer centre, the impact of fire, however small, could have a devastating effect on patient care. In existing healthcare premises, consideration should be given to the fitting of fire-suppression systems where the fire risk assessment justifies such a provision.

Part A: General fire safety
Health Technical Memorandum 05-02 – 'Guidance in support of functional provisions for healthcare premises'

Escape routes and strategies 2192

Once a fire has started, has been detected and a warning has been given, occupants should be able to escape safely, either unaided or with assistance, but without the help of the fire-and-rescue service. The escape routes and their evacuation strategy should form part of a fire safety strategy for the premises, which should also include the procedures for operating and maintaining any fire protection measures necessary for the safe operation of the building. Appendix G of Health Technical Memorandum 05-02, and Health Technical Memorandum 05-01, provide further guidance on the development and documentation of fire safety strategies and procedures.

Evacuation

In all cases, escape routes should be designed to ensure, as far as possible, that any person confronted by fire anywhere in the building should be able to turn away from it and escape (or be evacuated), either direct to a place of total safety (single-stage evacuation) or initially to a place of reasonable safety (progressive horizontal evacuation), depending on the escape strategy adopted.

A place of reasonable safety can be an adjacent subcompartment or compartment on the same level. From there, further escape will be possible either to another adjacent compartment or to a protected stairway or direct to final exit.

Means of escape and security

Exit doors on escape routes and final-exit doors should normally open in the direction of travel and be quickly and easily openable without the need for a key or special knowledge (for more information, see 'Provision and use of electronic locks on doors').

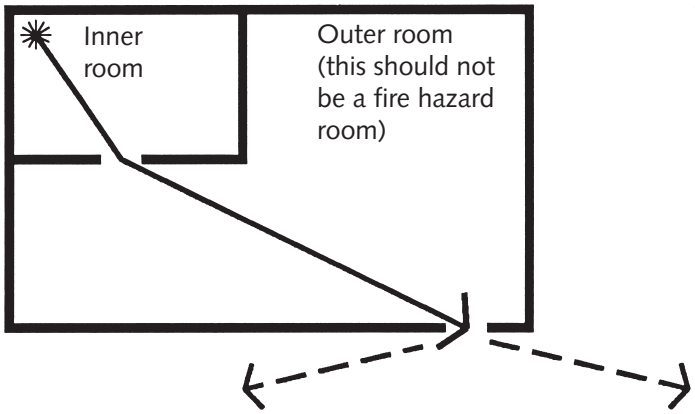
Powered sliding doors

Sliding doors are acceptable on escape routes in healthcare premises, provided they convert to outward-opening doors when subjected to reasonable pressure from any direction. In the case of powered sliding doors, they should be installed to ensure that they fail-safe to the fully open position in the event of a power failure. For further information on actuation of release mechanisms, see BS 7273-4.

Single-direction escape

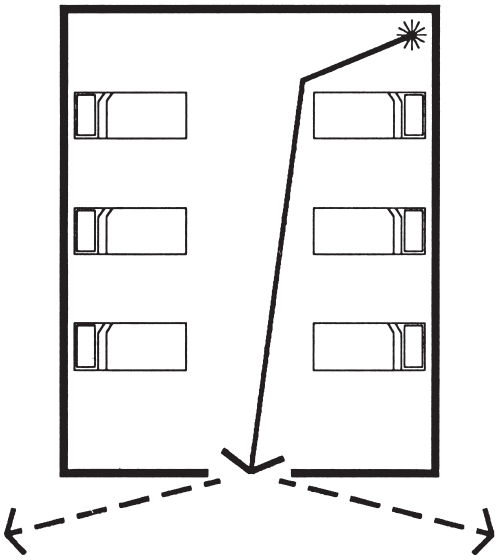
The maximum distance to be travelled before there is a choice of escape route or a protected escape route is 15 m (see figure below).

The maximum travel distance in a single direction of escape, before there is a choice of escape routes, should be no more than 15 m

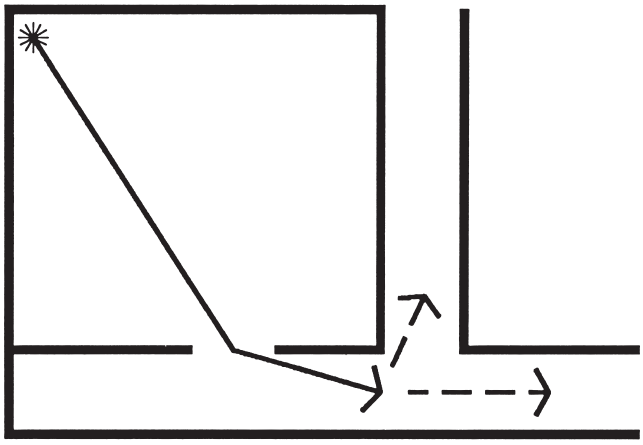


Single direction escape in this instance includes:

- travel within the inner room; and
- travel within the outer room.



Single direction escape in this instance includes only travel within the room



Single direction escape in this instance includes:

- travel within the room; and
- travel within the circulation space until there is a choice of escape routes.

Measurement of single-direction travel distance

The risks from an increased single-direction-escape travel distance could be mitigated by:

* a high degree of observation;
* adequately trained staff and use only by independent patients; or
* a reduced overall travel distance.

Single-direction escape may include escape from an inner room (a room only accessible through an access room), provided that:

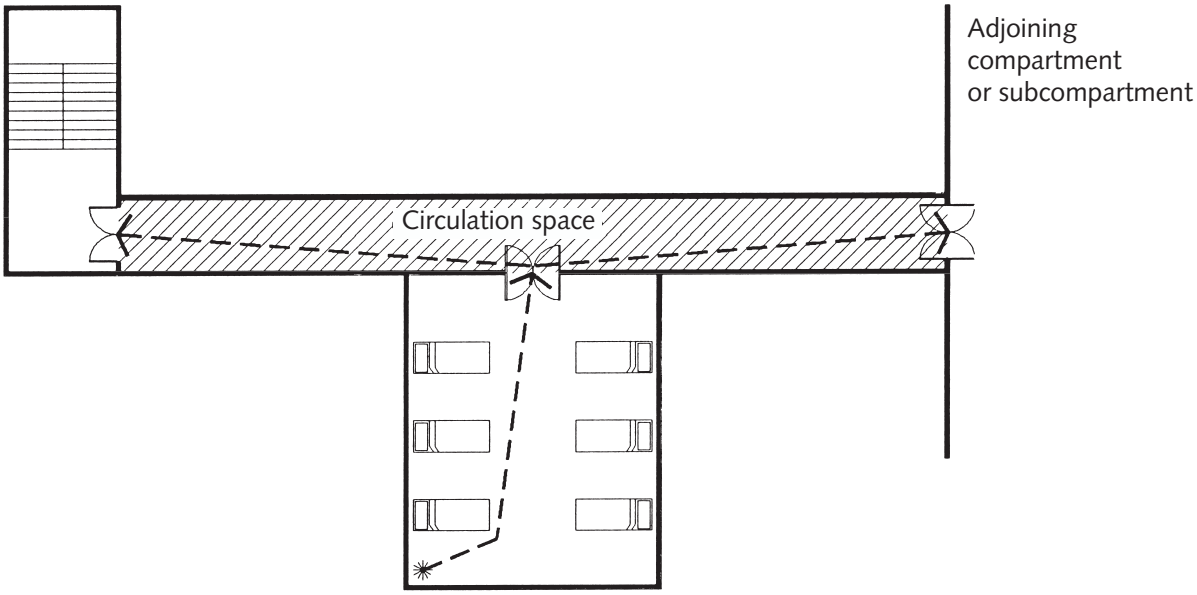
* the total distance to be travelled before there is a choice of escape route is carefully considered;
* the access room is not a fire hazard room; and
* the access room is fitted with automatic fire detection.

Overall travel distance

Travel distance is the maximum horizontal distance to be travelled between any point to one of the following:

* an adjoining compartment;
* a subcompartment;
* an escape stairway; or
* the outside.

The first part of this may be escape in a single direction before there is a choice of escape routes (see figure below).



Note:
Travel distance includes single-direction escape

Measurement of overall escape distance

The maximum overall distance to be travelled within a subcompartment is 30 m.

The design of circulation spaces (corridors or defined routes in open-plan areas) should ensure that it is possible to evacuate patients from the assessment area by the most appropriate method. In order to assess the suitability of circulation spaces, there should be an emergency evacuation plan for the assessment area, stating the preferred methods of evacuation (see Step 4).

A flat roof may form part of an escape route in older hospitals, provided that:

* there are an adequate number of staff available to assist with the evacuation;
* the patients are not categorised as “dependent" and "very high dependency” (see Health Technical Memorandum 05-02, Appendix H);
* the use of the route would not be prejudiced by smoke and flame issuing from openings in the building envelope;
* the roof construction will provide a period of fire resistance of at least 60 minutes;
* the route is defined, has a non-slip surface and has adequate handrails;
* escape lighting is provided for the route.

Subdivision of corridors

In healthcare premises (other than those accommodating dependent or very high dependency patients) where the corridors are more than 30 m long, the corridors should be subdivided near their centre by fire doors and, where necessary, fire-resisting construction so as to limit the spread of fire and smoke and to protect escape routes if there is a fire. Very often this can be achieved through the use of subcompartmentation.

In premises where there are dependent or very high dependency patients, hospital streets (where used) should be subdivided at 30 m intervals.

Where other corridors form part of the circulation routes, subdivision with fire doors and fire-resisting construction should be in line with the travel distances for subcompartmentation.

Note

Hospital design – even those with a hospital street – is based on the principle of protected areas (or subcompartments and compartments) rather than protecting corridors, which would be functionally restrictive.

Where a corridor serves two exits from a floor, these corridors should be subdivided with fire doors to separate the two exits.

Doors that are provided solely for the purpose of restricting the travel of smoke need not be fire doors, but will be suitable as long as they are:

* of substantial construction;
* capable of resisting the passage of smoke; and
* self-closing.

Doors on circulation routes fitted with a self-closing device should incorporate an electromagnetic hold-open device that is activated by the operation of the fire-detection and alarm system (see Health Technical Memorandum 05-03 Part B). Smoke should not be able to bypass these doors (for example above a false ceiling, or via alternative doors from a room or adjoining rooms that open on either side of the subdivision).

Protected stairways

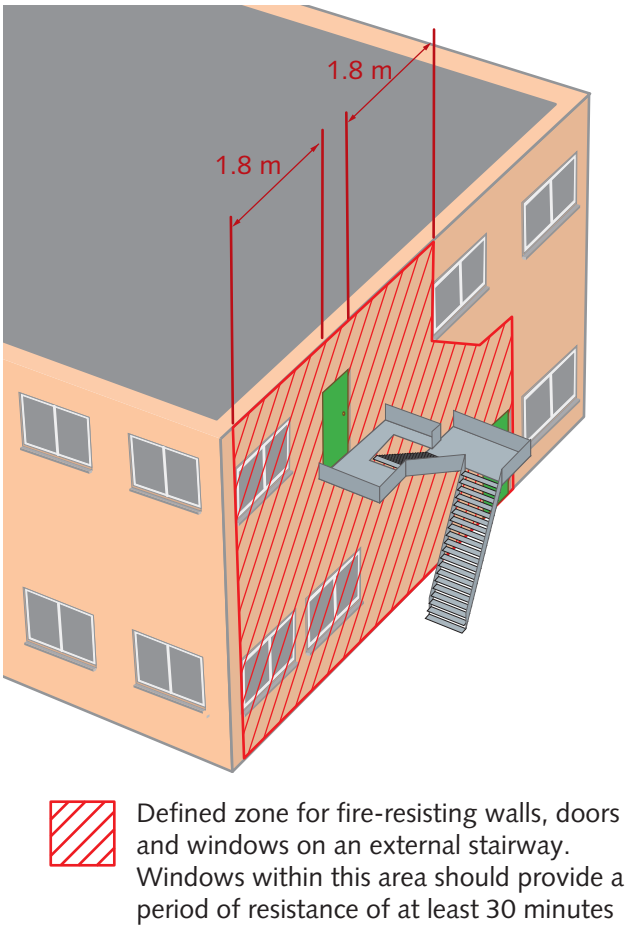
The positioning and design of stairways should ensure that it is possible to evacuate all patients from the assessment area by the most appropriate method. To assess the suitability of stairways, there should be an emergency evacuation plan for the assessment area, stating the preferred methods of evacuation (see Step 4 and Health Technical Memorandum 05-01).

A protected stairway can be considered suitable (see 'Compartmentation' under 'Fire-resisting structures' below) if it is in a protected shaft and has direct access, or protected access, to the outside at ground or access level. Such access should be

suitable for the evacuation of patients and lead to a place of total safety away from the building.

A stairway may serve more than one assessment area, but the aggregate width of the stairways provided should be sufficient for the number of people likely to be evacuated, taking into account the evacuation policy of the healthcare premises.

External stairways should not be prejudiced by smoke and flames issuing from openings in the building envelope (for example windows, doors – see figure below), and may not be appropriate for some patients with very high dependency.



Fire resistance of areas around external stairways

Height above ground

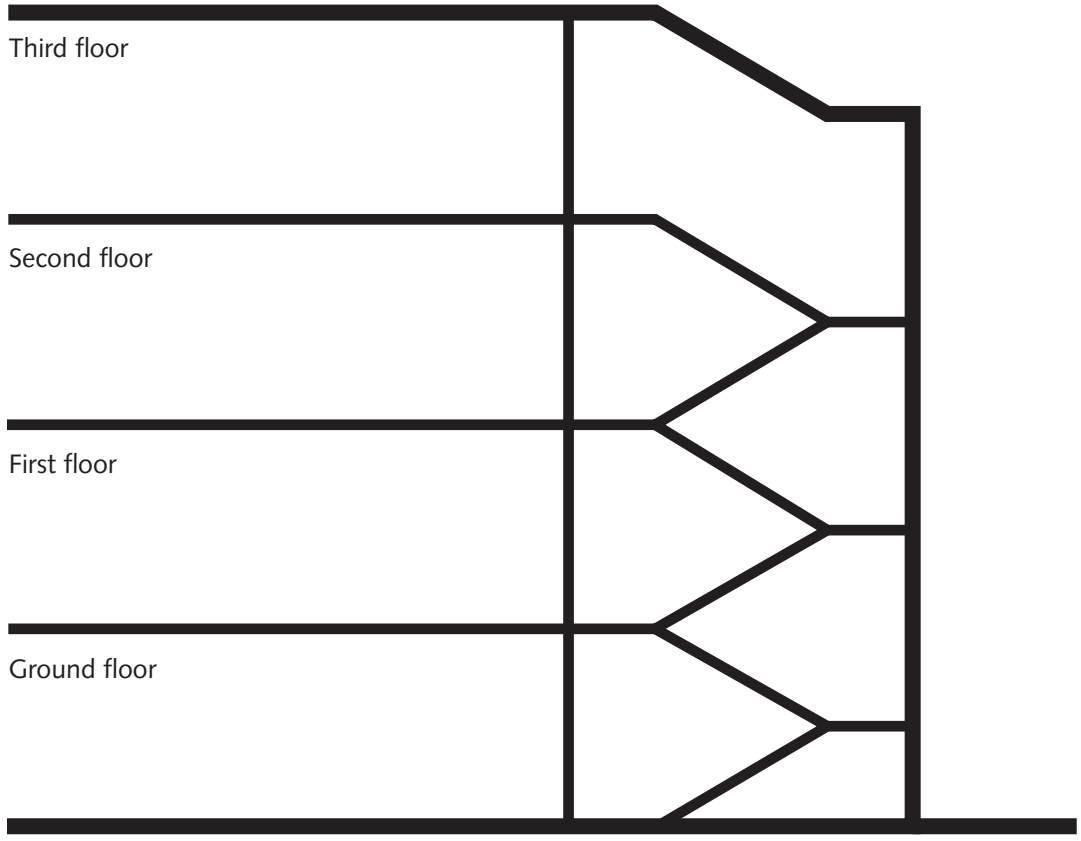
For dependent or very high dependency patients, their accommodation, and therefore the assessment area, should be on a floor no more than 12 m above ground-floor level (typically three floors – see figure below).

Where assessment areas are higher than the third storey (that is, higher than three storey heights above ground level), increased risk to dependent or very high dependency patients can typically be mitigated by combinations of:

* increased number of compartments;
* additional staircases;
* provision of escape lifts; and
* small compartment sizes.

If an assessment area is on two floors, the position of the higher floor should be considered in determining the height above ground level (see ‘Assessment areas’).

For guidance regarding basements, see the “FSO Green Guide”.



Height above ground

Staff-assisted evacuation

For dependent and very high dependency patients, it is the responsibility of the local management to devise suitable arrangements to ensure that adequate numbers of staff are on duty and available at all times (during meal breaks etc).

A minimum of two staff present at all times (three if there are over 30 patients) should be available to evacuate patients. These staff members should have received training in the methods of patient evacuation appropriate to the dependency of the patient and should be familiar with the evacuation procedures of their place of work. It is essential that the agreed evacuation strategies and procedures (see 'Managing fire safety' above) recognise that an effective evacuation will depend on

assistance given by staff from adjacent, and other, compartments in accordance with the hospital's emergency response procedures.

Escape bed lifts

If very high dependency patients are present in the assessment area, escape bed lifts can be used to partly reduce the fire risk they experience due to their dependency.

Where escape lifts are installed, there should be a minimum of two and they should comply with the guidance in Health Technical Memorandum 05-03 Part E – 'Escape bed lifts'. The lift lobby at ground or access level should provide access, or protected access, to the outside.

Provision and use of electronic locks on doors
Step 4: Record, plan, inform, instruct and train
Assessment areas
Health Technical Memorandum 05-02 – 'Guidance in support of functional provisions for healthcare premises'
Health Technical Memorandum 05-01 'Managing healthcare fire safety'
Health Technical Memorandum 05-03 Part B – 'Fire detection and alarm systems'
Health Technical Memorandum 05-03 Part E – 'Escape bed lifts'

Emergency escape lighting 2193

If there is a fire, occupants must be able to find their way to a place of safety by using escape routes that have enough lighting. Where any escape routes are internal and without windows or the premises are used during periods of darkness (including early darkness on winter days), some form of back-up to the normal escape-route lighting should be provided.

In most healthcare premises, a comprehensive system of automatic emergency escape lighting should be in place to illuminate all the escape routes. In addition, where people have difficulty seeing conventional signs, a "way guidance" system may need to be considered.

Escape lighting is required to illuminate the circulation spaces in the event of a fire and to guard against a failure of electrical supply. Health Technical Memorandum 06-01 – 'Electrical services: supply and distribution' gives guidance on escape lighting and details of the electrical supply required to ensure that sufficient normal lighting is on a maintained essential supply circuit (for healthcare and fire safety purposes).

Health Technical Memorandum 06-01 – 'Electrical services supply and distribution'

Signs and notices 2194

In some premises, it is important to avoid an institutional environment. However, signs must be used, where necessary, to help people to identify escape routes and

fire-fighting equipment. These signs are required under the Health and Safety (Safety Signs and Signals) Regulations 1996 and must comply with the provisions of these regulations.

Where the locations of escape routes and fire-fighting equipment are readily apparent and visible at all times, signs are not necessary.

Notices must be used, where necessary, to provide the following:

* instructions on how to use any fire safety equipment;
* the actions to be taken in the event of a fire; and
* information for the fire-and-rescue service (for example location of sprinkler valves or electrical cut-off switches).

All signs and notices should be positioned so that they can be easily seen and understood.

Fire signs and notices

Fire signs should be provided where appropriate in conspicuous positions. Fire signs should be recognisable, readable and informative. They should convey essential information to regular and infrequent users of the premises and the fire-and-rescue services. The visibility, illumination and height of display should be carefully considered.

Fire action notices should be permanently displayed in conspicuous positions throughout the assessment area and should be specific to it. Additional fire action notices giving further instruction should be displayed on staff noticeboards, in staff rooms and in residential accommodation. The purpose of fire action notices is to give concise instructions on the actions to be taken on discovering a fire and on hearing the alarm. Details of the emergency evacuation plan relevant to the assessment area should be included.

Health and Safety (Safety Signs and Signals) Regulations 1996

Surface finishes 2195

The finish applied to walls and ceilings can contribute to the spread of fire. Some finishes will transfer fire from one area to another very quickly by surface spread of flame. This not only makes the fire difficult to control, but provides additional fuel, which will increase the severity of the fire.

Class 0 is the highest product performance classification but is not a classification identified in any British Standard test. Class 0 is defined in Approved Document B of the Building Regulations.

Surface finishes that can be effectively tested for surface spread of flame are rated for performance by reference to the method specified in BS 476-7. Under this

standard, materials or products are classified 1, 2, 3 or 4, with Class 1 being the highest.

The classes normally used in healthcare premises are Class 0 or Class 1 (or their corresponding BS EN classifications), and the following table gives guidance on classifications for use in specific areas:

Location	Walls	Ceiling
Circulation spaces	Class 0	Class 0
Other rooms	Class 0	Class 1
Small rooms (up to 4 m²)	Class 1	Class 1

The following generic materials and products all achieve a Class 0 rating:

* products classified as non-combustible when tested to BS 476-4;
* brickwork, blockwork, concrete and ceramic tiles;
* plasterboard (painted or not, or with a PVC facing not more than 0.5 mm thick) with or without an air-gap, or fibrous or cellular insulating material behind;
* wood-wool cement slabs; and
* mineral-fibre tiles or sheets with cement or resin binding.

The following materials may also achieve Class 0 but, as the properties of different products with the same generic description vary, the ratings of these materials/ products should be substantiated by test evidence:

* aluminium-faced fibre-insulating boards;
* flame-retardant decorative laminates on calcium-silicate board;
* thick polycarbonate sheet;
* phenolic sheet; and
* unplasticised polyvinyl chloride (uPVC).

The following generic materials and products all achieve a Class 1 rating – all Class 0 materials referred to above plus:

* timber;
* hardboard;
* blockboard;
* particle board;
* heavy flock wallpapers; and
* thermosetting plastics – if flame-retardant-treated to achieve a Class 1 standard.

The following materials may also achieve Class 1 but, as the properties of different products with the same generic description vary, the ratings of these materials/ products should be substantiated by test evidence:

* phenolic or melamine laminates on a calcium-silicate substrate; and
* flame-retardant decorative laminates on a combustible core.

Additional finishes

Where walls are covered by temporary surfaces (such as posters, fabrics, prints and decorations), the significance of these needs to be considered.

Small, adequately separated areas with surface finishes of a lower classification than specified may be acceptable provided they do not amount to more than 5% of the total wall area (for example noticeboards).

Where walls have been subject to repeated painting over a number of years with gloss paints, the accumulated thickness of paint film may present a high fire hazard and provide for rapid transfer of fire over its surface. Where this situation exists, specialist technical advice should be obtained.

The use of anti-graffiti and intumescent paints requires careful consideration, especially when they are applied over existing painted surfaces. Full technical guidance should always be obtained from the manufacturer.

Floor coverings

The finish applied to a floor may also contribute to the spread of fire. (Health Technical Memorandum 61 – ‘Flooring’ gives guidance on the selection of floor finishes for hospitals.)

Although hardwood flooring is not considered a fire hazard, the finish applied to certain flooring materials may, over a period of time, accumulate and constitute a fire hazard.

The accumulation, over a number of years, of wax polish applied to a timber floor will pose a significant fire hazard.

Building Regulations 2000
Health Technical Memorandum 61 – ‘Flooring’

Fire-resisting structures 2196

Fire hazard rooms

These rooms should be enclosed in fire-resisting construction to ensure that they do not represent a serious fire hazard (fire hazard rooms are listed in Step 1).

Alternatively, an automatic fire-suppression system, such as sprinklers, could be used to ensure that fire hazard rooms do not represent a serious fire hazard.

Non-patient-access areas

Non-patient-access areas of complex healthcare premises (particularly hospitals) that can present a hazard due to fires starting outside the assessment area (see Step 1) should not be in the same compartment as the assessment area.

If dependent or very high dependency patients (see Step 2) are in a compartment adjoining a non-patient-access area listed in Step 1 (either horizontally or vertically), additional fire precautions may be necessary. In certain cases, the adjacency should not be permitted (see Table 1 in Health Technical Memorandum 05-02).

Compartmentation

In preparing the assessment area, it is important to check that the boundaries of the assessment area are either compartment or subcompartment walls. A compartment should have a fire-resisting floor that is used to separate one fire compartment from another and should have a minimum period of fire resistance of 60 minutes (see ‘Assessment areas’).

For healthcare premises containing dependent or very high dependency patients, the maximum compartment size within the assessment area should be 900–2000 m² (900–3000 m² in single-storey buildings).

To maintain the integrity of compartmentation, openings should be adequately fire-stopped and limited to:

* doors which have a period of fire resistance not less than that of the compartment structure;
* the following pipes and their diameters:
  - cast-iron or steel pipes – not more than 160 mm diameter,
  - pipes of other materials – not more than 40 mm diameter,
  - pipes such as those supporting vacuum operated tissue-sample pod transport systems, with a proprietary seal which has been shown by test to maintain the fire resistance of the compartment structure – any diameter;
* ventilation ducts that comply with the requirements of BS 9999;
* waste and laundry chutes of non-combustible construction which are accessed through fire-resisting doors; and
* protected shafts.

Openings in compartment floors for stairways, lifts and escalators, and pipes and ducts not complying with the previous paragraph, should be enclosed in a protected shaft that has the same period of fire resistance (integrity, insulation and, where applicable, load-bearing capacity) as the compartment floor.

The protected shaft/stairway should form a complete barrier to fire between different compartments to which the shaft connects.

Access to a protected shaft from a circulation space should be through doors and doorsets that provide a period of fire resistance of at least 60 minutes.

Access to a protected shaft from a room should be through a lobby. The combined fire resistance of the two sets of doors or doorsets to the lobby should be at least 60 minutes.

Means of ventilating protected shafts in the event of fire should be provided as follows:

* for a protected shaft containing a stairway – at the top of the stairway, an openable window, or similar, providing an area of 1 m^2;
* for a protected shaft containing a lift or lifts, a permanent opening of 0.1 m^2 for each lift.

Subdivision of roof and ceiling voids

Any roof or ceiling void above an assessment area should be subdivided by 30-minute fire-resisting barriers such that the maximum undivided area does not exceed 400 m^2. Openings should be limited to:

* doors which have at least 30 minutes' fire resistance;
* pipes that satisfy the guidance given in 'Compartmentation' (in this section).

Elements of structure

For the safety of dependent and very high dependency patients, staff and fire-fighters, elements of structure (such as a column or other parts of a structural frame, a load-bearing wall or a floor) should possess the following minimum levels of fire resistance:

* single-storey healthcare premises – 30 minutes;
* healthcare premises with floors between one and four storey heights above ground – 60 minutes;
* healthcare premises with floors above four storey heights above ground – 90 minutes;
* healthcare premises with basements two or more storeys deep – 90 minutes.

A level of fire resistance 30 minutes lower than the levels given in the paragraph above (with a minimum fire resistance of 30 minutes) can only be mitigated by an automatic suppression system (such as sprinklers).

Sandwich panels

Some buildings used as healthcare premises, or as part of a healthcare facility, have insulated core panels as exterior cladding or for internal structures and partitions.

Insulated core panels are easily constructed, which enables alterations and additional internal partitions to be erected with minimum disruption.

They normally consist of a central insulated core that is sandwiched between an inner and outer metal skin with no air-gap. The external surface is then normally coated with a PVC covering to improve weather resistance or the aesthetic appeal of the panel. The central core can be made of various insulating materials, ranging from virtually non-combustible through to highly combustible.

As it is difficult to identify the material that makes up a panel's central core, best practice can help to reduce any additional risk:

* Do not store highly combustible materials or install heating appliances such as baking ovens against the panels.
* Control ignition sources that are adjacent to, or penetrating, the panels.
* Have damaged panels or sealed joints repaired immediately and make sure that jointing compounds or gaskets used around the edges of the panels are in good order.
* Where openings have been made for doors, windows, cables and ducts, check that these have been effectively sealed and the inner core has not been exposed.
* Ensure that there has been no mechanical damage (for example caused by mobile equipment such as wheelchairs) – if so, repair any that has occurred.
* Ensure that any loads, such as storage and equipment, are only supported by panels that have been designed and installed to perform this function.

The panels should be installed by a competent person in accordance with industry guidance.

The use of combustible panels in healthcare premises should be carefully considered. The fire risk assessment may need to be revised to ensure that any increased risk resulting from this type of construction is considered. Wherever possible, panels with a non-combustible core should be used.

Further guidance on insulated core panels and the panel-labelling scheme can be found in Health Technical Memorandum 05-02.

External-envelope protection

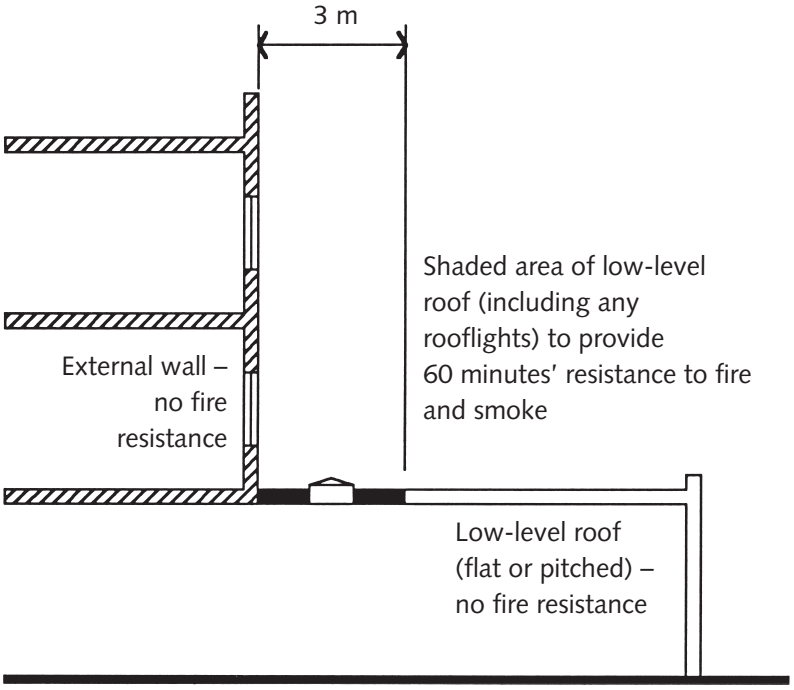
The external wall or roof should provide sufficient fire resistance to prevent external fire spread from adjacent buildings or part of the same building in different compartments.

The importance of external-envelope protection for existing buildings depends on the proximity of adjacent buildings or compartments within the same building. In

an isolated building surrounded by parkland, for example, the external-envelope protection may not be important. However, where the building is surrounded by similar buildings on a compact urban site, external-envelope protection becomes important.

Junction of walls and low-level roofs

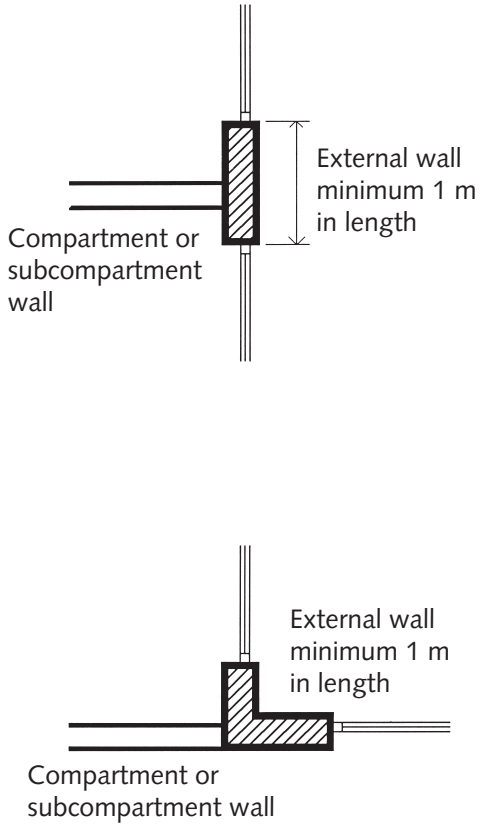
Where a roof abuts an external wall, the roof should provide a period of fire resistance of at least 60 minutes for a distance of 3 m from the wall (see figure below). However, where the area below the low-level roof is protected by automatic fire suppression (for example sprinklers), the fire resistance requirement could be reduced.



Fire resistance at junction of external walls and low-level roofs

Junction of compartment walls and external walls

When a compartment (or subcompartment) wall meets an external wall, there should be a 1 m wide storey-height strip of external wall that has a period of fire resistance at least equal to that of the compartment (or subcompartment) wall, to prevent fire spread between compartments (or subcompartments) (see figure below).

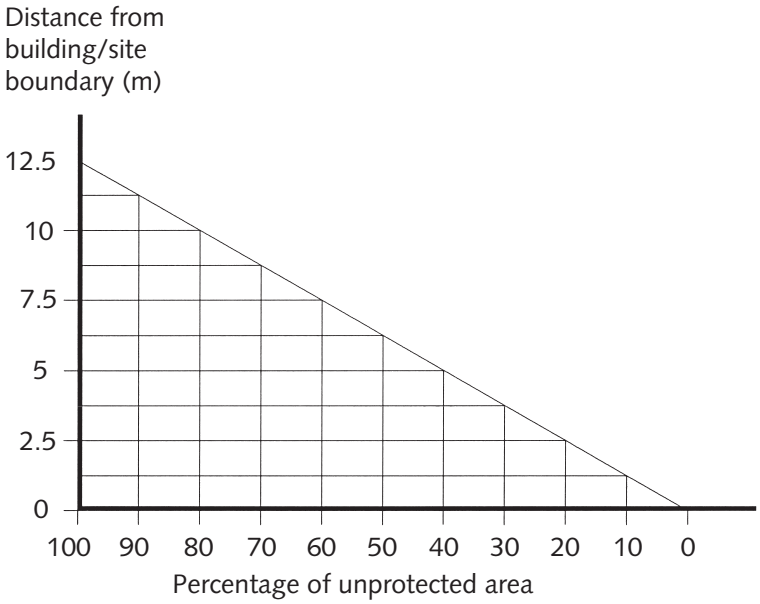


Junction of compartment walls and external walls

Unprotected area

The maximum percentage of unprotected area in an external wall should be determined from the graph in the figure below.

Other methods of determining space separation are described in Building Research Establishment (BRE) Report 187 – ‘External fire spread: building separation and boundary distances’.



Notes:
1. A relevant boundary may also be a notional boundary between two buildings on the same site.

2. Where the building is fitted with sprinklers throughout, the distance to the relevant boundary may be halved, subject to a minimum distance of 1 m being maintained.

Unprotected areas

Smoke control

Fire safety in healthcare premises does not normally require the installation of any form of mechanical smoke control; however, it may be present for a range of reasons including:

* an atrium smoke-control/extract system;
* a pressurised stairway in accordance with BS EN 12101-6; or
* a Nucleus or other hospital with smoke extraction from the hospital street.

Smoke control will normally form part of a fire-engineering solution and may mitigate some of the risks associated with extended single and/or overall travel distance (see Health Technical Memorandum 05-03 Part J – ‘Guidance on fire engineering of healthcare premises’).

Step 1: Identifying fire hazards
Step 2: Identifying people at risk
Assessment areas
Health Technical Memorandum 05-02 – 'Guidance in support of functional provisions for healthcare premises'

Health Technical Memorandum 05-03 Part J – ‘Guidance on fire engineering of healthcare premises’

Installation testing and maintenance 2197

The following are examples of checks and tests that should be considered.

Daily checks

The following checks should be carried out daily:

* Remove bolts, padlocks and security devices from fire exits.
* Ensure that doors on escape routes swing freely and close fully.
* Check exits and escape routes to ensure that they are clear from obstructions and combustible materials, and are in a good state of repair.
* Check the fire-alarm panel to ensure that the system is active and fully operational.
* Where practicable, visually check that emergency-lighting units are in good repair and apparently working.
* Check that all safety signs and notices are legible.

Weekly tests and checks

The following checks should be carried out weekly:

* Test fire-detection and warning systems, manually-operated warning devices, door hold-open devices, and electronically-controlled locking mechanisms and other devices interfaced with the fire-alarm control panel, following the manufacturer’s or installer’s instructions.
* Check that fire extinguishers and hose reels are correctly located and in apparent working order.

Monthly tests and checks

The following checks should be carried out monthly:

* Test all emergency lighting systems to make sure they have enough charge and illumination according to the manufacturer’s or supplier’s instructions.
* Check that all fire doors are in good working order and closing correctly, and that the frames and seals are intact.

Six-monthly tests and checks

A competent person should test and maintain the fire-detection and warning system.

Annual tests and checks

The emergency lighting and all fire-fighting equipment, fire alarms and other installed systems should be tested and maintained by a competent person. All structural fire protection and elements of fire compartmentation should be inspected and any remedial action carried out.

Equipment can cause a fire hazard in an assessment area. Therefore:

* an effective programme of planned preventive maintenance should be in operation throughout the healthcare premises;
* there should be an agreed procedure for reporting faults;
* action should be taken to repair faults once reported, or otherwise to ensure that the equipment is made safe;
* there should be an adequate number of electrical sockets for the equipment used in each room;
* there should be clear user instructions for complex electrical equipment;
* extension leads, two-way adaptors etc should be used only under the direction of a suitably qualified member of staff/other person;
* the wiring of plugs should not be carried out by untrained members of staff; and
* personal electrical equipment should only be used after it has been checked by a suitably qualified member of staff/other person.

Step 4: Record, plan, inform, instruct and train 2198

Record the significant findings and action taken 2200

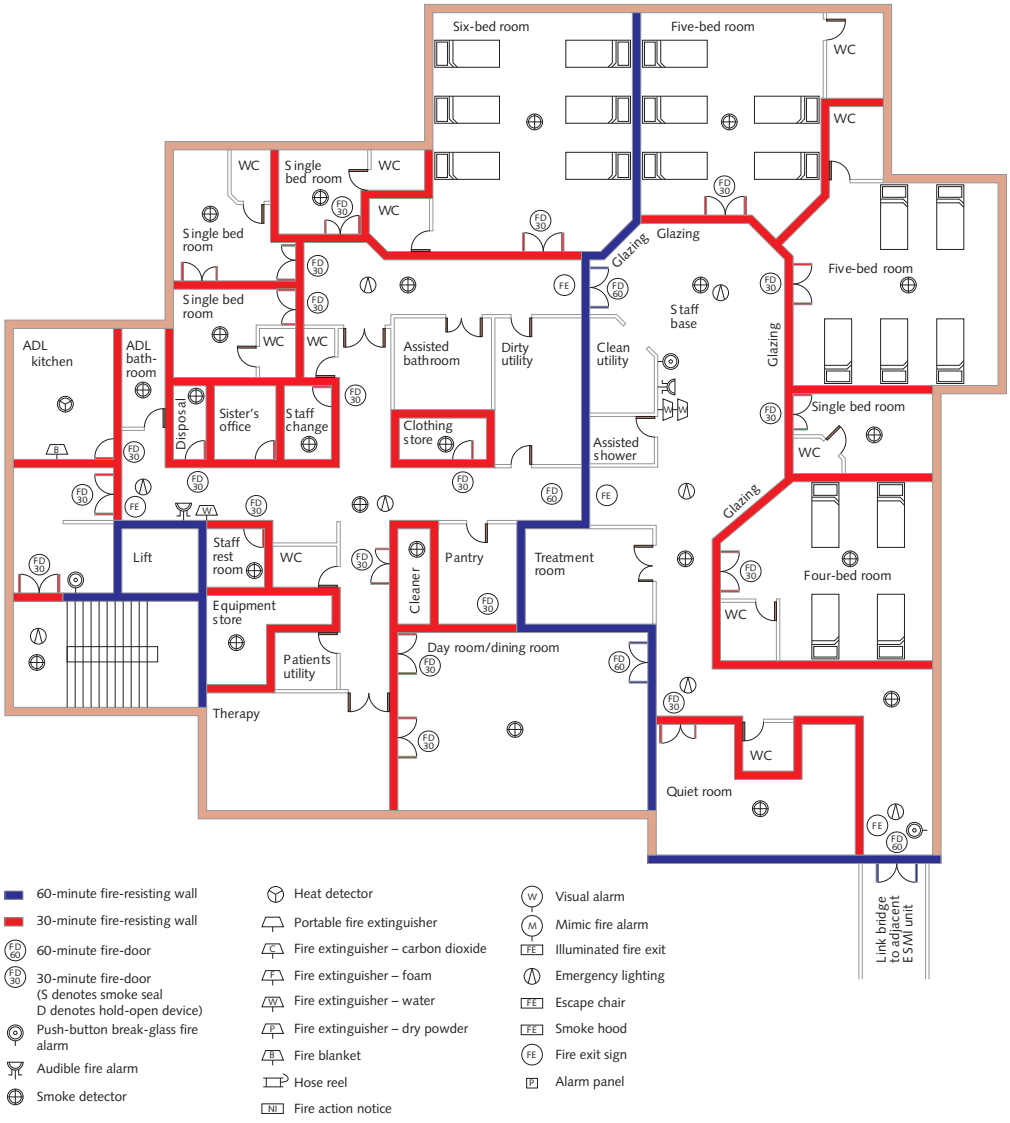
Significant findings should include details of:

* the fire hazards identified;
* the actions that have been taken or that will be taken to remove or reduce the chance of a fire occurring (preventive measures);
* persons who may be at risk, particularly those at greatest risk;
* the actions that have been taken or that will be taken to reduce the risk to people from the spread of fire and smoke (protective measures);
* the actions people need to take in case of fire, including details of any persons nominated to carry out a particular function (the emergency plan);
* the information, instruction and training identified that people need and how it will be given;
* evidence of cooperation and coordination with other occupants;
* evidence of significant findings of risk assessments conducted under regulations relating to DSEAR (Dangerous Substances and Explosive Atmospheres Regulations 2002) and Article 16 of the Fire Safety Order.

For further information see 'Example of recordings of significant findings'.

Healthcare organisations must be able to satisfy the enforcing authority, if called upon to do so, that a suitable and sufficient fire risk assessment has been undertaken. Keeping records will assist with this and will also form the basis of subsequent reviews. Where records are kept, not all details will be necessary for the enforcing authority – only those that are significant and those recording any action that has been taken (see ‘Statutory requirements’).

The fire risk assessment report should include a simple line drawing to illustrate the fire precautions (see figure below). This can help to monitor precautions as part of any ongoing review.



Example of a line drawing showing general fire safety precautions

Example of recording of significant findings
Statutory requirements
Dangerous Substances and Explosive Atmospheres Regulations 2002
Regulatory Reform (Fire Safety) Order 2005

Emergency plans

2201

An emergency plan for dealing with any fire situation should be in place.

The purpose of an emergency plan is to ensure that:

* where practicable, all staff know what to do if there is a fire; and
* the premises can be safely evacuated.

The emergency plan should be based on the fire safety strategy (see 'Risk assessment in patient-access areas') (which may be revised based on the outcome of the fire risk assessment) and be available for employees, their representatives (where appointed), patients (if they request it) and the enforcing authority.

In most premises providing healthcare, the emergency plan will need to be detailed and, where necessary, compiled only after consultation with the other occupiers of the premises and the responsible people (for example other occupiers in a multi-occupied building or those who have control over any part). In most cases, this means a single emergency plan covering the whole building. One person should be designated to coordinate this task.

The guidance on emergency plans in Operational provisions manual Part A: 'General fire safety' and Chapters 6 and 7 of Health Technical Memorandum 05-01 should be followed.

Part A: General fire safety
Risk assessment in patient-access areas
Health Technical Memorandum 05-01 – 'Managing healthcare fire safety'

Inform, instruct, cooperate and coordinate 2202

Clear and relevant information and appropriate instructions should be given to staff and the employers of other people working in the premises, such as contractors, about how to prevent fires and what they should do if there is a fire. In some premises it may also be prudent to give information to patients and regular visitors.

All relevant persons (for example contractors) should give and receive information about the fire safety arrangements and the findings of their and the healthcare organisation's fire risk assessments; both risk assessments should be amended accordingly, if necessary, before they start work.

Information and instruction 2204

All staff, including agency and bank staff, should be given information and instruction relevant to the overall fire safety strategy and their specific area of work, as soon as they start work and regularly after that. Specific consideration should be given to staff who work outside normal working hours, such as contract cleaners or maintenance staff.

The information and instruction given should be based on the emergency plan and must include:

* the fire safety strategy;
* the significant findings from the fire risk assessment;
* the measures that have been put in place to reduce the risk;
* what staff should do if there is a fire;
* the identity of people nominated with responsibilities for fire safety; and

* any special arrangements for serious and imminent danger to persons from fire.

Fire action notices can complement this information and, where used, should be posted in prominent locations.

Information about the premises should be readily available for the attending fire-and-rescue services. The information should be located at a pre-agreed location (usually the main entrance area). Information needed by fire crews about premises' construction, contents, hazards and built-in fire protection measures is becoming increasingly complex; the more information that can be made available, the lower the risk to occupants, fire crews and, potentially, the premises.

Further guidance on information and instruction to staff and on working with dangerous substances is given in Health Technical Memorandum 05-01 and Operational provisions manual Part A: 'General fire safety'.

Part A: General fire safety
Health Technical Memorandum 05-01 – 'Managing healthcare fire safety'

Cooperation and coordination 2205

In non-NHS-owned premises (for example PFI), or where there is more than one occupier and where others are responsible for different parts of the building, it is important that:

* liaison takes place between the various parties;
* they are made aware of any significant risks that have been identified; and
* any significant findings of their fire risk assessments are taken into account.

Employees have a responsibility to cooperate with their employer so far as it is necessary to help the employer to comply with any legal duty.

Fire safety training 2206

Adequate fire safety training for staff should be provided. The type of training should be based on the particular features of the premises and should:

* take account of the findings of the fire risk assessment;
* explain the emergency procedures;
* take account of the work activity and explain the duties and responsibilities of staff.

(Operational provisions manual Part A – 'General fire safety' offers more guidance on staff training.)

Training should not be reliant solely on computer-based instruction and/or the use of video, but should include face-to-face training delivered by a person competent

to do so and, where appropriate, should include practical demonstrations and/or exercise.

Part A: General fire safety

Step 5: Review

2208

2209

The fire risk assessment should be a dynamic document that is maintained under constant review. The following are typical examples of reasons to review the validity of the current fire risk assessment:

* changes to the work process, the way work is organised or the introduction of new equipment;
* alterations to the premises;
* changes in use or occupation of the premises;
* substantial changes to furnishings and fixings that may affect fire safety;
* the failure of fire precautions/fire protection systems.

The fire risk assessment does not need to be amended for every trivial change. However, should a change introduce new hazards, these hazards must be considered. If they are significant, necessary action should be taken to eliminate the risk or reduce ALARP.

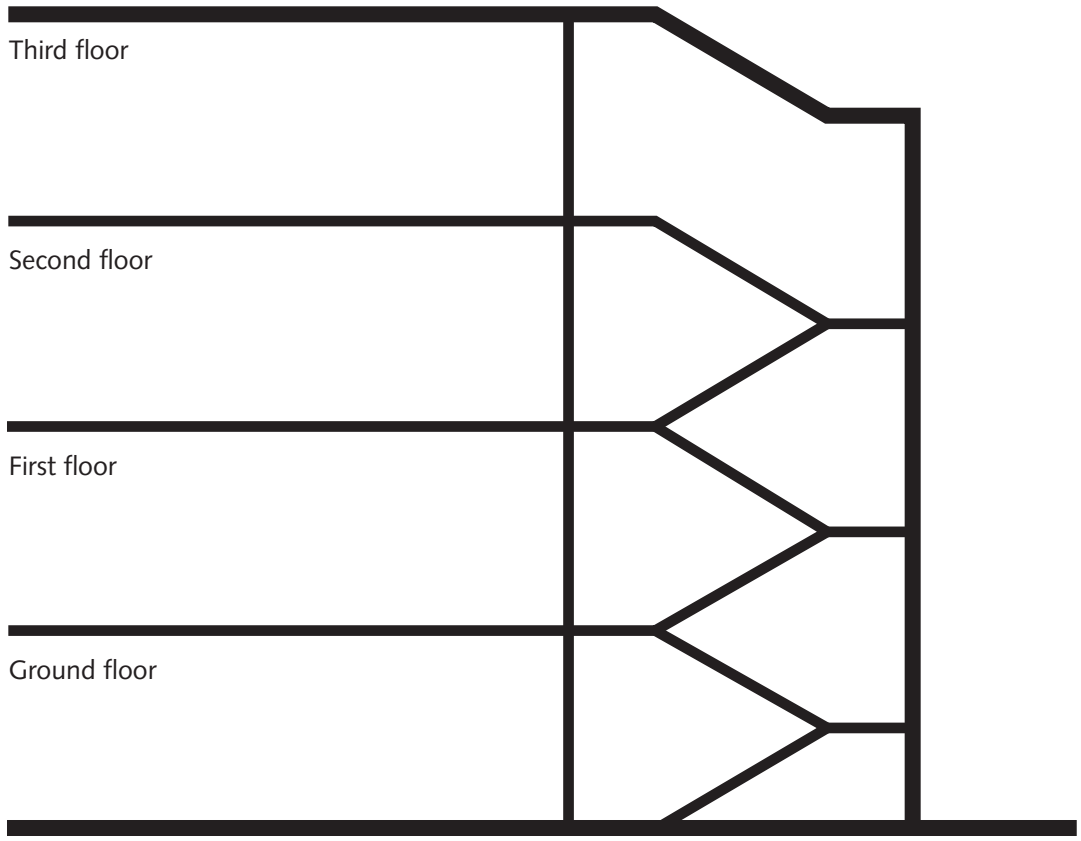
Examples of alternative solutions

2096

Introduction

2210

The following examples (see the table below) demonstrate generally acceptable layouts showing appropriate fire protection measures to ensure the safety of people using the premises. These are not intended to be prescriptive or exhaustive but merely to help understand how the principles of means of escape may be applied in practice (see also the figure below for clarity on floor levels).



Height above ground

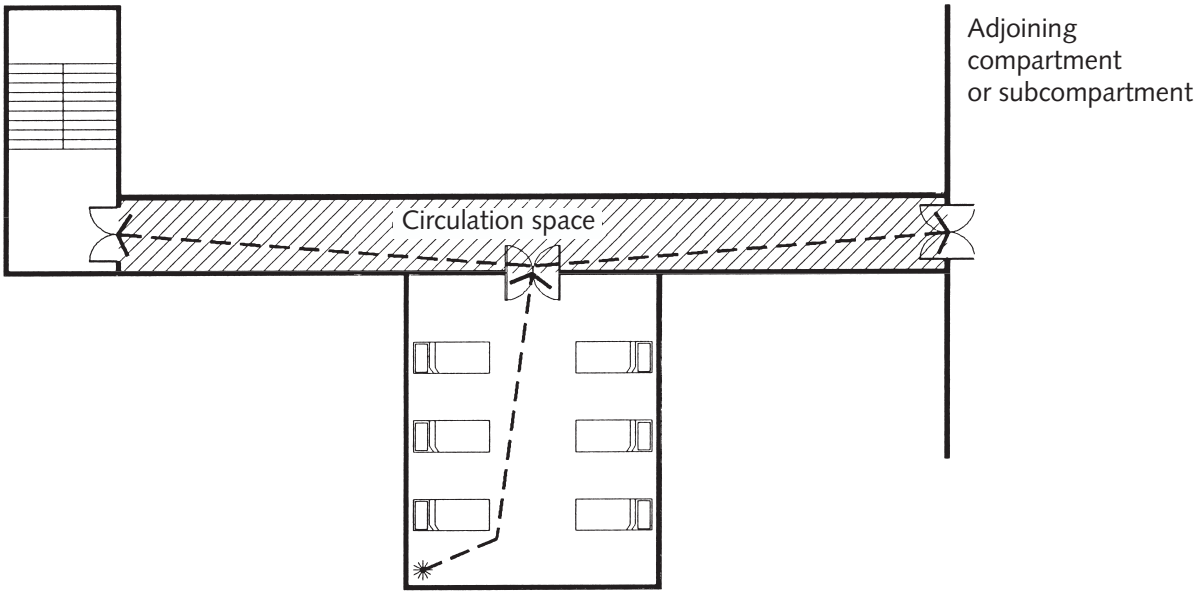
They are illustrative of the key features of the fire protection arrangements and not intended to be typical layouts. It may not be necessary to read all of this section, but only to consider those examples which most closely resemble the assessment areas.

Typical building examples

Example number	**Example title**
1	Ground to second floor with very high dependency patients
2	Ground to second floor with patients with a high propensity to start fires
3	Ground to second floor with poor observation of patients' beds
4	Floors on or above the third-floor level accommodating patient-care areas
5	Dependent patients with highly infectious diseases
6	Delayed evacuation of very high dependency patients

In all these examples, the following basic principles apply:

* The furthest point on any floor to the final exit or storey exit to a protected stairway is within the overall suggested travel distance (see figure below).
* The area near the exit is kept clear of combustibles and obstructions.
* There are sufficient protected stairways that are kept clear of combustibles and obstructions.
* The escape route leads to a final exit.
* Where the stairway is not protected (for example atria), the final exit is visible and accessible from the discharge point of the stairway at ground-floor level.
* High-risk rooms do not generally open directly into a protected stairway.
* If the fire risk assessment shows that people using any floor would be unaware of a fire, it may require additional fire-protection measures.
* Combustible materials such as surface finishes, textiles and furnishings, and other materials comply with Health Technical Memorandum 05-03 Part C – 'Textiles and furnishings'.
* Ignition sources comply with Operational provisions manual Part A: 'General fire safety'.
* Fire safety management complies with Health Technical Memorandum 05-01.
* Staff numbers are appropriate for progressive horizontal evacuation of the type and number of patients.
* Elements of structure, compartmentation and external fire spread comply with Health Technical Memorandum 05-02.
* Fire extinguishing such as manual fire-fighting equipment and access and facilities for the fire-and-rescue service comply with Operational provisions manual Part A and Health Technical Memorandum 05-02.



Note:
Travel distance includes single-direction escape

Measurement of overall escape distance

Part A: General fire safety
Health Technical Memorandum 05-02 – 'Guidance in support of functional provisions for healthcare premises'
Health Technical Memorandum 05-03 Part C – 'Textiles and furnishings'
Health Technical Memorandum 05-01 – 'Managing healthcare fire safety'

1. Ground to second floor with very high dependency patients

2211

Patients whose clinical treatment and/or condition creates a very high dependency on clinical staff (for example those in critical care areas, special care baby units or operating theatres) require additional fire precautions.

The additional protection for very high dependency patients can include a combination of:

* a high level of observation (more than 75% of beds from the staff base);
* a high number of staff (at least four staff members present at all times, six if there are over 30 patients on a ward);
* a high degree of refuge;
* more subcompartmentation around fire hazard rooms where it would not dilute levels of observation of beds;
* the installation of auto-suppression in key areas.

The above combination of measures is intended to:

* enable first-aid fire-fighting;
* increase the time available for escape by way of early detection of the fire; and
* reduce evacuation time by way of staff numbers and refuge.

2. Ground to second floor with patients with a high propensity to start fires 2212

Patients who may have a high propensity to start fires either accidentally or deliberately include:

* older people;
* patients suffering from mental illness;
* patients with drug or alcohol dependency.

The additional protection for areas containing these patients can include:

* a high level of observation (more than 75% of beds from the staff base); or
* a very high standard of automatic detection (including air-sampling systems in addition to the standard L1 to ensure that any fire is detected early in its development).

The above measures are intended to increase the time available for escape by way of early detection of the fire.

3. Ground to second floor with poor observation of patients' beds 2213

On wards, most fires are detected by staff observing smoke at an early stage of the fire's development.

However, many wards have single rooms, which means that fewer patient beds are visually observable from the staff base.

Where observation is poor, additional protection can include:

* a high number of staff (at least four staff members present at all times, six if there are over 30 patients in a ward);
* an automatic suppression system such as a water sprinkler system; or
* a combination of:
  - short travel distances, and
  - a high degree of refuge.

The above measures are intended to:

* enable first-aid fire-fighting;

* increase the time available for escape by way of early detection of the fire;
* reduce evacuation time by way of staff numbers or a combination of fire precautions; or
* reduce fire severity due to suppression.

Of course it is also possible to increase the observation, but this may be undesirable for nursing or clinical reasons.

4. Floors on or above the third-floor level accommodating patient-care areas

2214

The greater the height that patients are located at, the more difficult it is for them to receive assistance in the event of a fire or use vertical egress should that become necessary. Therefore, use of the third or higher floor for the care of very high dependency patients should only be considered where these restrictions are negated.

The additional protection for patients on or above a third floor can include a combination of:

* an increase in the number of compartments and/or subcompartments;
* installation of escape bed lifts; and
* small compartments (that is, less than 900 m^2).

The above measures are intended to enhance facilities for progressive horizontal evacuation and vertical evacuation should that become necessary.

Of course it may be possible to relocate in-patient accommodation in the future.

5. Dependent patients with highly infectious diseases

2215

These are likely to be specialised locations in a limited number of hospitals. The clinical condition of the patient requires them to be isolated from all other patients/ wards.

A higher standard of fire protection should be applied to minimise the need for evacuation. The following should be considered:

* additional fire-resisting construction/compartmentation;
* double-door protection (although provided for infection control, it provides an additional bonus for fire protection);
* a high level of observation;
* a higher level of fire training for staff;
* pre-planned communications (to inform ward staff of location and development of the incident in order to allow for risk assessment with regard to when to evacuate the isolation area);
* pre-planned evacuation route to minimise the effects of infection.

6. Delayed evacuation of very high dependency patients 2216

Very high dependency patients in operating theatres or critical care areas may not be able to be moved until they have been stabilised and prepared for evacuation.

Full evacuation is usually only undertaken as a last resort. This delay will require additional fire precautions irrespective of patients' location and height above ground level.

The additional protection for very high dependency patients can include a combination of:

* a very high level of observation;
* a very high staff-to-patient ratio;
* a high degree of refuge;
* additional subcompartmentation;
* a higher level of fire training for staff, appropriate to their specific location;
* good communications (both within the department and between the coordinator and the fire service);
* additional zoning of the fire alarm.

The provision of sprinklers should also be considered, if appropriate.

Hospitals designed to the Nucleus standards 2217

Nucleus hospitals are those that were designated as conforming to the "Nucleus" concept by submission to the Department of Health. Such hospitals generally used standard departmental designs with minor modifications agreed locally with the fire authority. In addition to complete hospitals, Nucleus extensions were built to a number of existing hospitals; they were also classified as conforming to the Nucleus principles in the same way.

Some hospitals were not designed to Health Technical Memorandum 05-02 (formerly Health Technical Memorandum 81) but were designed to conform to the principles of Nucleus fire precautions. The objective of the Nucleus fire-precaution strategy is to provide life safety, not property protection.

There are seven main areas where Nucleus hospitals differ from other hospitals:

* management;
* detection and alarm;
* means of escape;
* fire and smoke containment;
* smoke dispersal;
* separation of fire hazards;
* fire-fighting provisions.

Nucleus fire precautions were an integral part of the Nucleus hospital design system. The design strategy provided for the control and containment of a fire as well as for the safe evacuation of patients and other personnel. In common with Approved Document B of the Building Regulations and Health Technical Memorandum 05-02, it is assumed that there will only be one fire at a time within the hospital complex.

The Nucleus design provides a high standard of fire safety and, provided all the fire safety measures that were part of the original Nucleus design are maintained and the management aspects of fire safety are acceptable, the overall level of fire safety should be acceptable. For this reason, it is important that the original as-built fire plans are available.

NHS trusts with hospitals that have incorporated Nucleus fire precautions should maintain their records and drawings to inform the fire risk assessment of these premises.

“Nucleus-related”

Some hospitals were loosely termed “Nucleus-related”. These hospitals used the cruciform template as the basis for planning, but did not fully adopt the Nucleus principles and were not designated by the Department of Health as Nucleus. The fire precautions in these hospitals were designed to comply with Health Technical Memorandum 81. Nucleus fire precautions recommendations should not be used in these hospitals.

Health Technical Memorandum 05-02 – 'Guidance in support of functional provisions for healthcare premises'
Health Technical Memorandum 81 – 'Fire precautions in new hospitals' (Archive)
Building Regulations 2000

Example of recording of significant findings

2098

2218

Ref no.	Location	Findings	Variation/ justification or action required	Interim control measures	Final control measures & date	Initial/ final risk rating		Person responsible	Date completed/ Competent Person initials

Provision and use of electronic locks on doors 2099

2222

Introduction

The use of electronic locks on doors throughout healthcare premises is common practice. In order to use these devices effectively, reference should be made to BS 7273-4 and to Health Technical Memorandum 05-03 Part B.

Before deciding on the use of electronic locks, other methods of providing security should be considered. Advice should be sought from the trust local security management specialist as well as the trust fire safety adviser.

Where the use of an electronic lock is the only suitable solution, variations from the British Standard and Health Technical Memoranda will need to be justified on an individual risk assessment basis.

Escape routes and security

All doors on escape routes and final exit doors should normally open in the direction of travel and be quickly and easily openable without the need for a key. This is the starting point for all securing devices.

Exceptionally, there are specific life-safety protection reasons for additional security. If this is the case, each circumstance should be assessed individually. Such circumstances may include:

* maternity areas, where there is demonstrable evidence of abduction risks;
* mental health units, where the safety of patients, staff and members of the public could be at risk and where security of drugs is particularly important.

Additional security measures put in place simply to secure areas from theft or to manage the movement of people are not appropriate.

The need for extensive escape routes through sensitive areas should be addressed at design stage.

However, it is accepted that in certain situations issues may arise, particularly in premises that provide accommodation for people with mental illness, where it may be essential to maintain a high level of supervision during an evacuation. In these

situations, doors that open automatically on the activation of the fire-alarm system may not be acceptable, since patients would be able to leave and not necessarily follow the safest evacuation route, or could abscond, possibly placing themselves or others at risk. It would also be more difficult to establish that everyone had been safely removed from the fire-affected area.

In areas where this type of security is important, the staffing levels should be sufficient to allow the operation of a key-operated, or other staff-controlled, evacuation system. Any slight delay in opening doors compared with an automatic system should be compensated for by the ability of a well-trained staff team to organise a controlled evacuation more quickly.

The relationship between the securing of doors against unwanted entry and the ability to escape through them easily in an emergency has often proved problematical. Careful planning and the use of quality materials remain the most effective means of satisfying both of these objectives. Any device that impedes people making good their escape, either by being unnecessarily complicated to manipulate or not being readily openable, is not acceptable. It is at this stage where close cooperation between fire safety and security personnel is essential.

Acceptable securing devices that deny unauthorised access can take many forms, but in most premises where there are members of the public present or where users are not familiar with the building, panic exit bars (that is, push bars or touch bars) should be used. For further information, see BS EN 1125.

Premises that have limited numbers of staff or where most users are familiar with the building and where panic is not likely may use alternative devices (that is, push pads or lever handles). For further information, see BS EN 179.

Electrical locking devices

Electrically-operated entry-control devices have been developed and adapted for use as securing devices on fire exits. They fall into two main categories – electromechanical and electromagnetic:

* Electromechanical devices comprise electromechanical lock-keeps and draw-bolts, which can be controlled by people inside the premises by entering a code or by using smart cards, which have been adapted to control the exit from certain areas. Electromechanical locking devices **are not acceptable on escape doors, unless**:
  - they are fitted with a manual means of overriding the locking mechanism such as a push bar, push pad or lever handle; or
  - they do not rely on a spring mechanism, they fail-safe open and they are not affected by pressure, in which case the criteria for electromagnetic devices should be applied.
* Electromagnetic devices comprise an electromagnet and a simple fixed retaining plate with no moving parts, and are therefore generally

considered to be more reliable. Correctly designed and installed, they should “fail-safe unlocked” in operation. The release of this type of device is controlled by the interruption of electrical current to the electromagnet, either manually via a switch, or by a break-glass point (typically coloured green, often with an alarm to alert operation), or by linking via a relay to the fire-warning and detection system of the premises.

Time-delay devices on escape routes

A further development is the fitting of a time-delay system to the electronic door-locking device. This delays the actual opening of an exit door for a variable period following operation of the panic bar or other exit device. Periods of between 5 and 60 seconds can be pre-set at the manufacturing stage or can be adjusted when fitted.

These are not normally acceptable for use by members of the public. However, they may be acceptable for use by staff who are familiar with their operation and are suitably trained in their use.

The use of a time-delay system that prevents the opening of emergency exits for a pre-set time is primarily used to improve security. These add a further layer of complexity to the fire strategy and should only be used in non-public areas when all other options, such as relocating valuable equipment or exterior boundary management, have been addressed.

A time-delay arrangement may be acceptable in areas such as mental health and baby units, but the implications of panic for escapees finding their escape apparently blocked should be fully considered.

Design, installation and management of electronic exit-door control devices

Access control should not be confused with exit control. Many devices are available which control the access to the premises but retain the immediate escape facility from the premises.

The use of any such devices (that is, other than those complying to BS EN 1125 or BS EN 179) may be accepted by enforcing authorities if the responsible person can demonstrate, through a suitable risk assessment for each individual door, both the need and the adequate management controls to ensure that people can escape safely from the premises. In particular:

* All other alternatives should have been explored and evaluated prior to considering the use of these devices.
* The requirement for additional exit control systems should be carefully assessed and should not be seen as a substitute for good management of the employees and occupants.

* All such devices, if fitted, must be in accordance with BS 7273-4 and fully meet the requirements for category A actuation:
  - There should be an additional means of manually overriding the locking device at each such exit (typically a green break-glass point) and any variation must be justified by an individual risk assessment (for example the fitting of a remote override at a continually-staffed nurse station).
  - The device should be connected to the fire-warning and/or detection system.
  - In premises where there may be large numbers of people, the devices should only be considered when linked to a comprehensive automatic fire-detection and warning system in accordance with BS 5839-1 (for example L1, L2).
* The emergency exit doors should be clearly labelled with instructions on how to operate them.
* In public areas, when push bars are fitted on escape doors, they should release the electromagnetic locks immediately and allow the exit doors to open.
* Each emergency exit door should be fitted with a single securing device when the premises are occupied.

The use of electronic door-locking devices should be considered with particular care in premises with a number of different occupancies. The management of a complicated system of evacuation for many different groups is unlikely to be practicable.

The technical standards in respect of sourcing, maintaining and testing must be extremely high. When part of the management control system involves trained personnel helping others at these doors, it is vital to ensure these people are available at all times.

The use of electronic exit-door control devices should not be considered where the number of trained staff is low or where members of the public would be expected to operate the devices without help.

BS 8220 gives further advice on security in buildings and, while this standard does refer to electronic locking devices, it also acknowledges that the balance must remain on the side of emergency escape rather than security.

Health Technical Memorandum 05-03 Part B – ‘Fire detection and alarm systems’

Basement escape and protection

2100

2224

In all buildings with basements (other than very small basements), stairways serving upper floors should preferably not extend to the basement, and in any case should not do so where there is only one stairway serving the building.

Any stairway that extends from the basement to upper floors should be separated at basement level by a fire-resisting lobby or corridor between the basement and the stairway.

All basements where there are more than 60 people likely to be present or where there are no fire exits direct to a place of safety should be provided with at least two stairways.

Where patients who are not fully ambulant have access to the basement, their escape should not necessitate travelling vertically up a stairway to a final exit (see Health Technical Memorandum 05-02 for further information).

Wherever possible, all stairways to basements should be entered at ground or access level from the open air, and should be positioned so that smoke from any fire in the basement would not obstruct any exit serving the other floors of the building.

Where any stairway links a basement with the ground floor, the basement should be separated from the ground floor by two 30-minute fire-resisting doors, one at basement level and one at ground-floor level.

Any floor over a basement should provide 60 minutes’ fire resistance. Where this is impractical, provided no smoke can pass through the floor, automatic smoke detection linked to a fire-alarm system that is audible throughout the premises could be provided as an alternative in the basement area.

Health Technical Memorandum 05-02 – 'Guidance in support of functional provisions for healthcare premises'

Access and facilities for fire-and-rescue services 2102

2225

Access and facilities should be provided for the fire-and-rescue services to respond to a fire, including:

* adequate site access should be provided for fire-fighting appliances, which may need to attend in significant numbers, points of access having been agreed with the local fire authority;
* access should be provided for fire-and-rescue-service appliances to within 45 m of 25% of the building perimeter;
* access points into the building for fire-fighting personnel should be provided at suitable locations around the building; and
* at least one staircase suitable for use by fire-fighting personnel should be provided, which can be entered at ground level from a suitable access for fire-and-rescue-service appliances.

Hospitals built since 1978 should comply with the provisions of the relevant version of Health Technical Memorandum 81 or Health Technical Memorandum 05-02 (depending on which was applicable at the time of Building Regulations application). The fire-fighting facilities outlined in section 3.3 of the “FSO Green Guide” should be taken into consideration during the risk assessment process.

Hospital roads used by fire-fighting appliances should be kept clear of obstructions at all times.

If parking is allowed, sufficient safe clearance should be provided and maintained to allow fire-fighting appliances clear passage at all times.

Fire-and-rescue-service access should be indicated on site plans and any associated mimic displays.

Health Technical Memorandum 81 – 'Fire precautions in new hospitals' (Archive)
Health Technical Memorandum 05-02 – ‘Guidance to support functional provisions in healthcare premises’
Fire Safety Order Risk Assessment Guide – Healthcare Premises