Guide to fire safety in premises providing sleeping accommodation

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Contents to be added after text changes are completed

Preface

This guidance gives advice on how to avoid fires and how to ensure people's safety if a fire does start. Why should you read it? Because:

- Fire kills. In 2003 UK Fire Brigades attended over 31400 fires in non domestic buildings. These fires killed 20 people and injured over 1400.

- Fire costs money. The costs of a serious fire can be high and afterwards many businesses do not reopen. In 2003, the costs as a consequence of fire, including property losses, human casualties and business disruption, were estimated at £3.3bn.

This guide applies to England and Wales only. It does not set prescriptive standards, but provides recommendations and guidance for use when assessing the adequacy of fire precautions in premises providing sleeping accommodation. Other fire risk assessment methods may be equally valid to comply with fire safety law. The guide also provides recommendations for the fire safety management of the premises.

Your existing fire safety arrangements may not be the same as the recommendations used in this guide but, as long as you can demonstrate that they meet an equivalent standard of fire safety, they are likely to be acceptable. If you decide that your existing arrangements are not satisfactory there may be other ways to comply with fire safety law. This means there is no obligation to adopt any particular solution in this guide if you prefer to meet the relevant requirement in some other way.

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 accordance with current Building Regulations. In such cases, it is likely that these measures will be satisfactory as long as they are being properly maintained and no significant increase in risk has been introduced.

This guide should not be used to design fire safety in new buildings. Where alterations are proposed to existing premises, they may be subject to Building Regulations. However, it can be used to develop the fire safety strategy for the building.

Who should use this guide?

This guide is for all employers, managers and owners of premises and other responsible persons providing sleeping accommodation. Details of other guides in the series are given in Table 1 and on the back cover. It tells you what you have to do to comply with fire safety law, helps you to carry out a fire risk assessment and identify the general fire precautions you need to have in place.

It applies to premises where the main use is for sleeping accommodation.

The premises addressed in this guide include:

- guest houses and bed and breakfast accommodation
- hotels and motels;
- hostels, eg Y.M.C.A , Y.W.C.A., youth hostels, bail hostels or homeless persons' accommodation;
- refuges, eg family accommodation centres, halfway houses;
- residential health and beauty spa centres,
- residential conference, seminar and training centres;
- student halls of residence and areas of sleeping accommodation in other training institutions including military barrack style quarters;
- those areas of buildings in boarding schools that provide sleeping accommodation;
- seminaries and other religious colleges;
- the common areas of houses in multiple occupation (HMO);
- the common areas of flats and maisonettes;
- the common areas of sheltered accommodation, where care is not provided (where care is provided, see residential care guide Table 1);
- holiday chalets, holiday flat complexes, camping, caravan holiday parks (other than privately owned individual units);
- areas in workplaces, where staff 'sleeping-in' is a condition of the employment or a business requirement, as in licensed premises and hotels (but not including tied

accommodation such as separate flats, houses or apartments).

Note: HMOs and flats and maisonettes are covered by two pieces of legislation, the Fire Safety Order[1] and the Housing Act 2004 [Ref BA].

This guide addresses:

- sleeping accommodation for staff;
- sleeping, dining or other accommodation for guests/residents;
- common areas for residents.

This guide is not intended for use in:

- domestic premises occupied as a single private dwelling;
- hospitals, residential care and nursing homes;
- prisons and other establishments where people are in lawful custody.

It has been written to provide guidance for a responsible person, to enable them to carry out a fire risk assessment in less complex premises. If you read the guide and decide that you are unable to apply the guidance, then you should seek expert advice of a competent person. More complex premises will probably need to be assessed by a person who has comprehensive training or experience in fire risk assessment. However this guide can be used for multi-occupied buildings to address fire safety issues within their individual occupancies.

It may also be useful for:

- residents;
- 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 sleeping accommodation.

If your premises are listed as of historic interest, also see Appendix C.

Fire safety is only one of many safety issues with which managerment must concern themselves to minimise the risk of injury or death to staff or the public. Unlike most of the other safety concerns, fire has the potential to injure or kill large numbers of people very quickly. This guidance is concerned only with fire safety but many of the measures discussed here will impact upon other safety issues, and vice versa; it is recognised that these various differing safety demands can sometimes affect one another and managerment should consult other interested agencies (eg HSE) where necessary to confirm that they are not contravening other legislation/guidance.

You can get advice about minimising fire losses from your insurer.

How to use the guide

This guide is divided into two parts:

- Part 1 Explains what fire risk assessment is and how you might go about it. Fire risk assessment should be the foundation for all the fire precautions in your premises.

- Part 2 Provides further guidance on fire precautions. The information is provided for you and others to dip into during your fire risk assessment or when you are reviewing your precautions.

The appendices provide example checklists, some detailed technical information on fire resisting elements and advice on historic buildings.

The rest of this introduction explains how the law applies.

Technical terms are explained in the glossary and references to other publications listed at the end of the publication are identified by a superscript number in the text.

Table 1 Fire safety guides in this series

Guide	Use
Fire safety in offices and shops	All offices and retail premises
Fire safety in factories and warehouses	All factories and warehouse storage premises
Fire safety in premises providing sleeping accommodation	All places where sleeping accommodation is provided, except hospitals, care homes, places of custody and single private dwellings
Fire safety in premises providing residential care	Suitable for all residential and nursing homes
Fire safety in educational premises	Teaching establishments ranging from crèches through to universities
Fire safety in small and medium places of assembly	Public houses, clubs, restaurants and cafés, village halls, community centres, libraries, marquees, churches and other places of worship or study accommodating up to 300 people
Fire safety in large places of assembly	Suitable for premises where more than 300 people could gather, eg shopping centres, large nightclubs, exhibition and conference centres, sports stadia, marquees, museums, libraries, churches, cathedrals and other places of worship or study
Fire safety in theatres, cinemas, concert halls and similar premises	Suitable for all theatres, cinemas, concert halls and similar premises
Fire safety at outdoor events	Suitable for all open air events, eg theme parks, zoos, music concerts, sporting events, fairgrounds and county fairs
Fire safety in hospital premises	All hospitals
Fire safety in transport premises and facilities	Suitable for all transportation terminals and interchanges, tunnels and sub-surface railways.

An introduction to the Fire Safety Order

Previous general fire safety legislation

The Regulatory Reform (Fire Safety) Order 2005[1] replaces previous fire safety legislation. Any fire certificate issued under the Fire Precautions Act 1971[2] will cease to have any effect. If a fire certificate has been issued in respect of your premises or the premises were built to recent Building Regulations, as long as you have made no material alterations and all the physical fire precautions have been properly maintained, then it is unlikely you will need to make any significant improvements to your existing physical fire protection arrangements to comply with the Fire Safety Order.[1] However, you must still carry out a fire risk assessment and keep it up to date to ensure that all the fire precautions in your premises remain current and adequate.

If you have previously carried out a fire risk assessment under the Fire Precautions (Workplace) Regulations 1997,[3] as amended 1999,[4] and this assessment has been regularly reviewed then all you will need to do now is revise that assessment taking account of the wider scope of the Fire Safety Order[1] as described in this guide...

If your premises is an HMO, flats or maisonette your premises may also be subject to the Housing Act 2004 [Ref BA]. Further information regarding the scope of the Housing Act can be found by contacting your local housing authority.

Introduction

The Fire Safety Order[1] applies in England and Wales. Northern Ireland and Scotland will have their own laws. It covers general fire precautions and other fire safety duties which are needed to protect 'relevant persons' in case of fire in and around most 'premises'. The 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[1] 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, eg the manager 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 (eg a complex), all must take all reasonable steps to cooperate and coordinate with each other.

If you are the responsible person you must carry out a fire risk assessment which must focus on the safety in case of fire of all 'relevant persons'. It should pay particular attention to those at special risk, such as disabled people, those who you know have special needs and

children, and must include consideration of any dangerous substance liable to be on the premises. Your fire risk assessment will help you identify risks that can be removed or reduced and to decide the nature and extent of the general fire precautions you need to take

If your organisation employs five or more people, your premises are licensed or an alterations notice is in force, you must record the significant findings of the assessment. It is good practice to record your significant findings in any case.

There are some other fire safety duties you need to comply with:

- You must appoint one or more ‘competent persons’, depending on the size and use of your premises, to carry out any of the preventive and protective measures required by the Order[1] (you can nominate yourself for this purpose). A competent person is someone with enough training and experience or knowledge and other qualities to be able to implement these measures properly.

- You must provide your employees with comprehensible and relevant information on the risks to them identified by the fire risk assessment, about the measures you have taken to prevent fires, and how these measures will protect them if a fire breaks out.

- You must consult your employees (or their elected representatives) about nominating people to carry out particular roles in connection with fire safety and about proposals for improving the fire precautions.

- You must, before you employ a child, provide a parent with comprehensible and relevant information on the risks to that child identified by the risk assessment, the measures you have put in place to prevent/protect them from fire and inform any other responsible person of any risks to that child arising from their undertaking.

- You must inform non-employees, such as residents, temporary or contract workers, of the relevant risks to them, and provide them with information about who are the nominated 'competent persons', and about the fire safety procedures for the premises.

- You must co-operate and co-ordinate with other responsible persons who also have premises in the building, inform them of any significant risks you find and how you will seek to reduce/control those risks which might affect the safety of their employees.

- You must provide the employer of any person from an outside organisation who is working in your premises (eg agency providing temporary staff) with comprehensible and relevant information on the risks to those employees and the preventive and protective measures taken. You must also provide those employees with appropriate instructions and relevant information about the risks to them.

- If you are not the employer but have any control of premises which contain more than one workplace, you are also responsible for ensuring that the requirements of the Fire Safety Order[1] are complied with in those parts over which you have control.

- You must consider the presence of any dangerous substances and the risk this presents to relevant persons from fire.

- You must establish a suitable means of contacting the emergency services and provide them with any relevant information about dangerous substances.

- You must provide appropriate information, instruction and training to your employees, during their normal working hours, about the fire precautions in your workplace, when they start working for you, and from time to time throughout the period they work for you.

- You must ensure that the premises and any equipment provided in connection with fire-fighting, fire detection and warning, or emergency routes and exits are covered by a suitable system of maintenance and are maintained by a competent person in an efficient state, in efficient working order and in good repair.

- Your employees must co-operate with you to ensure the workplace is safe from fire and its effects, and must not do anything that will place themselves or other people at risk.

The above outline some of the main requirements of the Order.[1] The rest of this guide will explain how you can meet these requirements.

Who enforces the Fire Safety Order?

The local fire and rescue authority (the fire and rescue service) will enforce the Fire Safety Order[1] in most premises. The exceptions are:

- crown-occupied/owned premises where Crown fire inspectors will enforce;

- premises with armed forces establishments where the defence fire and rescue service will enforce; and

- certain specialist premises including construction sites, ships (under repair or construction) and nuclear installations, where HSE will enforce.

- sports grounds and stands designated as needing a safety certificate by the local authority, where the local authority will enforce.

The enforcing authority will have the power to inspect your premises to check that you are

complying with your duties under the Fire Safety Order.[1] They will look for evidence that you have carried out a suitable fire risk assessment and acted upon the significant findings of that assessment. If, as is likely, you are required to record the outcome of the assessment they will expect to see a copy.

If the enforcing authority is dissatisfied with the outcome of your fire risk assessment or the action you have taken, they may issue an enforcement notice that requires you to make certain improvements or, in extreme cases, a prohibition notice that restricts the use of all or part of your premises until improvements are made.

If your premises are considered by the enforcing authority to be high risk, they may issue an alterations notice that requires you to inform them before you make any changes to your premises or the way they are used.

Failure to comply with any duty imposed by the Order[1] or any notice issued by the enforcing authority is an offence. You have a right of appeal to a magistrates court against any notice issued. Where you agree that there is a need for improvements to your fire precautions but disagree with the enforcing authority on the technical solution to be used (eg what type of fire alarm system is needed) you may agree to refer this for an independent determination.

If having read this guide you are in any doubt about how fire safety law applies to you, contact the fire safety office at your local fire and rescue service.

If you manage premises in use before 2006, then your premises may have been subject to the Fire Precautions Act[2] and the Fire Precautions (Workplace) Regulations [3,4]. Where the layout (means of escape) and other fire precautions have been assessed by the fire and rescue service to satisfy the guidance that was then current, then it is likely that your premises already conforms to many of the recommendations here, providing you have undertaken a fire risk assessment as required by the Fire Precautions (Workplace) Regulations [3,4].

New premises should be designed to satisfy the Building Regulations. Such premises should conform to the recommendations here with regard to means of escape and other fire precautions.

You will still need to carry out or review a risk assessment to comply with the Order[1].

Part 1 Fire risk assessment

Managing fire safety

Good management of fire safety is essential to ensure that fires are unlikely to occur; that if they do occur they are likely to be controlled or contained quickly, effectively and safely; or that, if a fire does occur and grow,, everyone in your premises is able to escape to safety easily and quickly.

The risk assessment that you must carry out will help you ensure that your fire safety procedures, fire prevention measures, and fire precautions (plans, systems and equipment) are all in place and working properly, and the risk assessment should identify any issues that need attention. Further information is available in Part 2.

What is a fire risk assessment?

A fire risk assessment is an organised and methodical look at your premises, the activities carried on there and the likelihood that a fire could start and cause harm to those in and around the premises.

The aims of the fire risk assessment are:

- To identify the fire hazards.
- To reduce the risk of those hazards causing harm to as low as reasonably practicable.
- To decide what physical fire precautions and management policies are necessary to ensure the safety of people in your building if a fire does start.

The terms ‘hazard’ and ‘risk’ are used throughout this guide and it is important that you have a clear understanding of how these should be used.

- Hazard: Anything that has the potential to cause harm.
- Risk: The chance of harm occurring.

If your organisation employs five or more people, or your premises are licensed or an alterations notice requiring it is in force, then the significant findings of the fire risk assessment, the actions to be taken as a result of the assessment and details of anyone

especially at risk must be recorded. You will probably find it helpful to keep a record of the significant findings of your fire risk assessment even if you are not required to do so.

How do you carry out a fire risk assessment?

A fire risk assessment will help you determine the chances of a fire starting and the dangers from fire that your premises present for the people who use them and any person in the immediate vicinity. The assessment method suggested in this guide shares the same approach as that used in general health and safety legislation and can be carried out either as part of a more general risk assessment or as a separate exercise. As you move through the steps there are checklists to help you.

Before you start your fire risk assessment, take time to prepare, and read through the rest of Part 1 of this guide.

Much of the information for your fire risk assessment will come from the knowledge your employees, colleagues and representatives have of the premises, as well as information given to you by people who have responsibility for other parts of the building. A tour of your premises will probably be needed to confirm, amend or add detail to your initial views.

It is important that you carry out your fire risk assessment in a practical and systematic way and that you allocate enough time to do a proper job. It must take the whole of your premises into account, including outdoor locations and any rooms and areas that are rarely used. If your premises are small you may be able to assess them as a whole. In larger premises you may find it helpful to divide them into rooms or a series of assessment areas using natural boundaries, eg bedroom areas, kitchens, offices, stores, as well as corridors, stairways and external routes.

If your premises are in a building with more than one occupier then the information on hazard and risk reduction will still be applicable to you. However, any alterations to the use or structure of your premises will need to take account of the overall fire safety arrangements in the building.

Your premises may be simple, with few people present or with a limited degree of business activity, but if it forms part of a building with different occupancies, then the measures provided by other occupiers may have a direct effect on the adequacy of the fire safety measures in your premises.

Under health and safety law (enforced by the Health and Safety Executive (HSE) or the local authority) you are required to carry out a risk assessment in respect of any work processes in your workplace and to take or observe appropriate special, technical or organisational measures. If your health and safety risk assessment identifies that these processes are likely

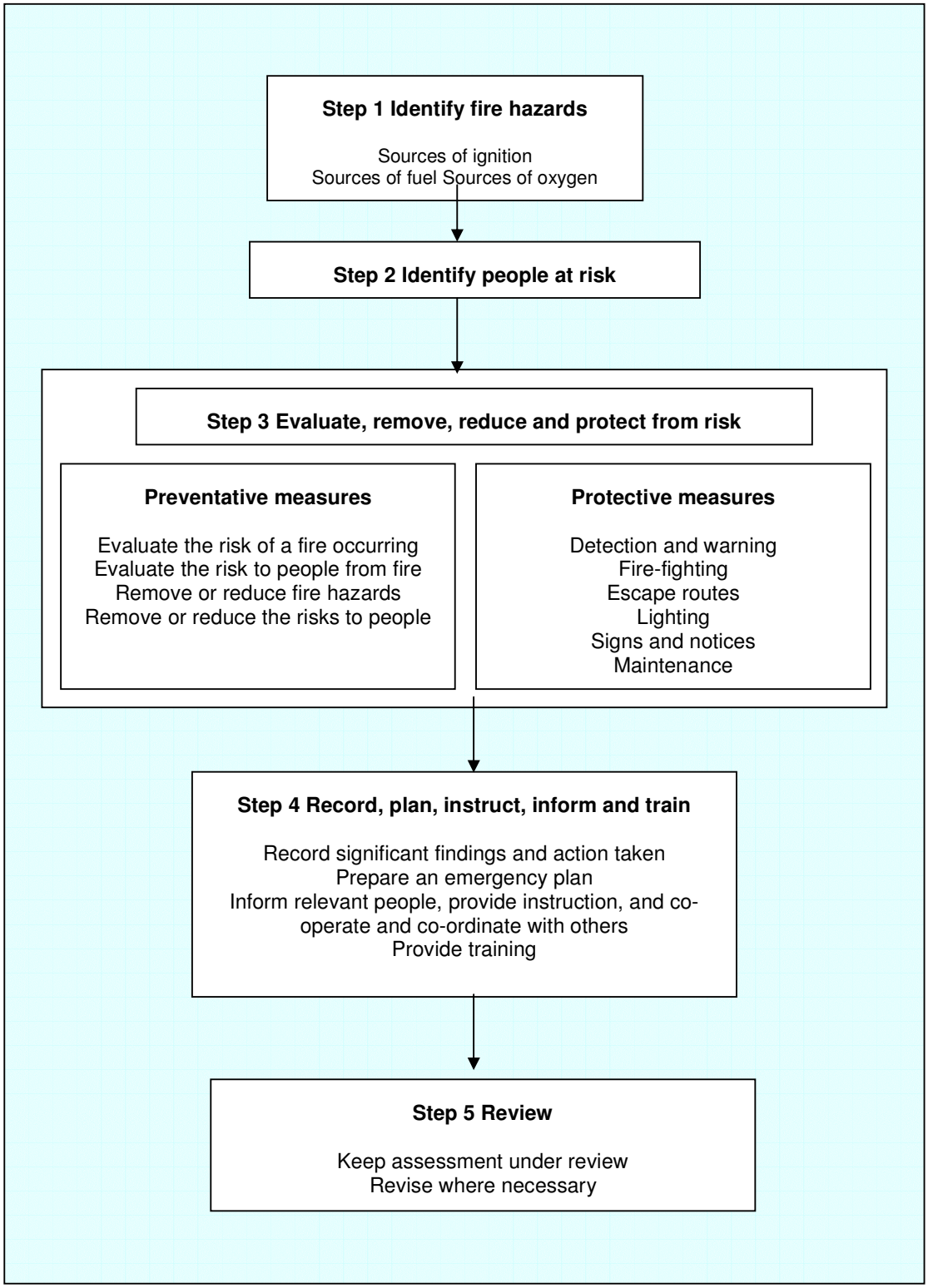
to involve the risk of fire or the spread of fire then you will need to take this into account during your fire risk assessment under the Fire Safety Order[1], and prioritise actions based on the level of risk.

You need to appoint one or more ‘competent persons’ (this could be you) to carry out any of the preventive and protective measures required by the need to comply with the Order[1] . In very large premises or complexes, this person may be an appropriately trained full-time employee, or may be a duty or shift manager.

Your fire risk assessment should demonstrate that, as far as is reasonable, you have considered the needs of all relevant people, including disabled people.

Figure 1 shows the five steps you need to take to carry out a fire risk assessment.

Figure 1 The five steps of a fire risk assessment



Step 1 Identify fire hazards

For a fire to start, three things are needed:

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

If any one of these is missing, a fire cannot start. Taking measures to avoid the three coming together will therefore reduce the chances of a fire occurring.

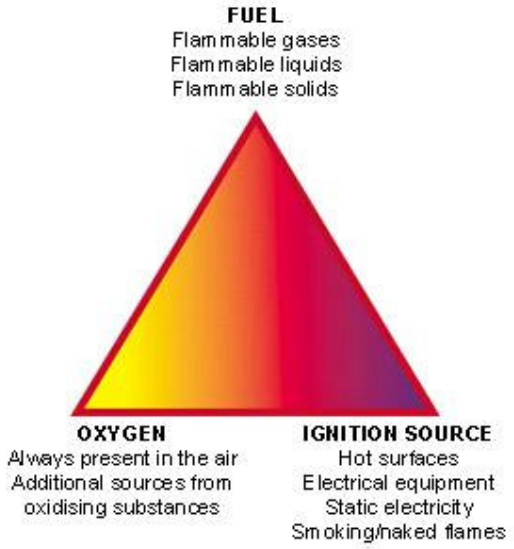


Figure 2 The fire triangle

The remainder of this step will advise on how to identify potential ignition sources, the materials that might fuel a fire and the oxygen supplies which will help it burn.

1.1 Identify sources of ignition

You can identify the potential ignition sources in your premises by looking for possible

sources of heat which could get hot enough to ignite material found in your premises. These sources could include:

- smokers' material, eg cigarettes, matches and lighters;
- naked flames, eg candles, night lights, gas or liquid-fuelled open-flame equipment;
- electrical, gas or oil-fired heaters (fixed or portable);
- boilers;
- hot processes, eg welding by contractors;
- cooking equipment and activities;
- machinery with hot surfaces;
- faulty or misused electrical equipment, eg electric blankets and computers;
- lighting equipment (fixed and movable), eg halogen lamps or table lamp;
- obstruction of ventilation equipment;
- arson, deliberate ignition, vandalism etc.

Indications of 'near-misses', such as scorch marks on furniture or fittings, discoloured or charred electrical plugs and sockets, cigarette burns etc, can help you identify hazards which you may not otherwise notice.

Figure 3 Sources of ignition

1.2 Identify sources of fuel

Anything that burns is fuel for a fire. You need to look for the things that will burn reasonably easily and are in enough quantity to provide fuel for a fire or cause it to spread to another fuel source. Some of the most common 'fuels' found in premises providing sleeping accommodation are:

- furniture (permanent and temporary storage);
- textiles and soft furnishings, such as hanging curtains and clothing displays;
- laundry (bedding, linen, towels);
- waste products, particularly finely divided items such as shredded paper and wood shavings, off cuts, and dust;
- waste storage, refuse containers and skips;
- flammable-liquid-based products, such as paints, varnishes, thinners and adhesives;
- flammable liquids and solvents, such as white spirit, methylated spirit, cooking oils and disposable cigarette lighters;
- flammable chemicals, such as certain cleaning products, photocopier chemicals and dry cleaning that uses hydrocarbon solvents;
- flammable gases such as liquefied petroleum gas (LPG), and aerosols;
- paper products, packaging materials, stationery, advertising material, paper and books;
- decorations for seasonal and religious occasions;
- plastics and rubber, such as video tapes, polyurethane foam-filled furniture and polystyrene-based display materials;
- guest possessions;
- wall and ceiling hanging and linings;
- vending machines.

You should also consider the materials used to line walls and ceilings, eg polystyrene or carpet tiles, the fixtures and fittings, and brought-in materials, and how they might contribute

to the spread of fire. Further information is available in Part 2.

1.3 Identify sources of Oxygen

The main source of oxygen for a fire is in the air around us. In an enclosed building this is provided by the ventilation system in use. This generally falls into one of two categories: natural airflow through doors, windows and other openings; or mechanical air conditioning systems and air handling systems. In many buildings there will be a combination of systems, which will be capable of introducing/extracting air to and from the building.

Additional 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 burn. These chemicals should be identified on their container (and COSHH data sheet, see Figure XXXX) by the manufacturer or supplier who can advise as to their safe use and storage; or
- Oxygen supplies from cylinder storage, eg oxygen used in welding processes.

Figure XXXX Label on oxidising materials

Checklist

- Have you identified all potential ignition sources?
- Have you identified all potential fuel sources?
- Have you identified all potential sources of oxygen?
- Have you made a note of your findings?

Step 2 Identify people at risk

As part of your fire risk assessment, you need to identify those at risk if there is a fire. To do this you need to identify the occupants of the building, eg guests, residents, people working, either at permanent workstations or at occasional locations around the building, and to consider who else may be at risk, such as visitors, visiting contractors etc, and where these people are likely to be found.

You must consider all the people who use the premises but you should pay particular attention to people who may be especially at risk such as:

- people asleep (who will be slow to respond and disorientated),
- employees who work alone and/or in isolated areas, eg cleaners, maintenance staff, security staff, night staff;
- people who are unfamiliar with the premises, eg guests, visitors, customers, seasonal staff, new staff and contractors,
- unaccompanied children and young persons;
- visitors for separate functions, eg weddings, funerals, reunions, social events;
- people with disabilities* (including mobility impairment, or hearing or vision impairment etc.);
- people who may have some other reason for not being able to leave the premises quickly eg parents with children;
- sensory impaired due to alcohol, drugs or medication.
- other persons in the immediate vicinity of the premises.

In evaluating the risk to people with disabilities you may need to discuss their individual needs. In larger buildings used extensively by the public you may need to seek professional advice.

Checklist

- Have you identified who is at risk?

- Have you identified why they are at risk?

Step 3 Evaluate the risks and take action

The management of the building and the way people use it will have an effect on your evaluation of risk. Management may be your responsibility alone or there may be others, such as the building owners or managing agents, who also have responsibilities. In multi-occupied buildings all those with some control must co-operate and you need to consider the risk generated by others in the building.

3.1 Evaluate, remove, reduce and protect from risks

The chances of a fire starting will be low if your premises has few ignition sources and combustible materials are kept away from them.

In general, fires start in one of three ways:

- accidentally, such as when smoking materials are not properly extinguished or when lights are knocked over;
- by act or omission, such as when electrical equipment is not properly maintained, or when waste is allowed to accumulate near to a heat source;
- deliberately, such as an arson attack involving setting fire to external rubbish bins placed too close to the building.

Look critically at your premises and try to identify any accidents waiting to happen and any acts or omissions which might allow a fire to start. You should also look for any situation that may present an opportunity for an arsonist

Further guidance is given in Part 2, Section 1 on evaluating the risk of a fire starting.

3.2 Evaluate the risk to people from a fire starting in the premises

In Step 2 you identified the people likely to be at risk should a fire start anywhere in the

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* Visit the Disability Rights Commission website on www.drc-gb.org for more information.

premises and earlier in Step 3 you identified the chances of a fire occurring. It is unlikely that you will have concluded that there is no chance of a fire starting anywhere in your premises so you now need to evaluate the actual risk to those people should a fire start and spread from the various locations that you have identified.

While determining the possible incidents, you should also consider the likelihood of any particular incident; but be aware that some very unlikely incidents can put many people at risk.

To evaluate the risk to people in your premises, you will need to understand the way fire can spread. Fire is spread by three methods:

- convection
- conduction
- radiation

Convection

Fire spread by convection is the most dangerous and causes the largest number of injuries and deaths. When fires start in enclosed spaces such as buildings, the smoke rising from the fire gets trapped by the ceiling and then spreads in all directions to form an ever-deepening layer over the entire room space. The smoke will pass through any holes or gaps in the walls, ceiling and floor into other parts of the building. The heat from the fire gets trapped in the building and the temperature rises.

Conduction

Some materials, such as metal shutters and ducting, can absorb heat and transmit it to the next room, where it can set fire to combustible items that are in contact with the heated material.

Radiation

Radiation heats the air in the same way as an electric bar heater heats a room. Any material close to a fire will absorb the heat until the item starts to smoulder and then burn.

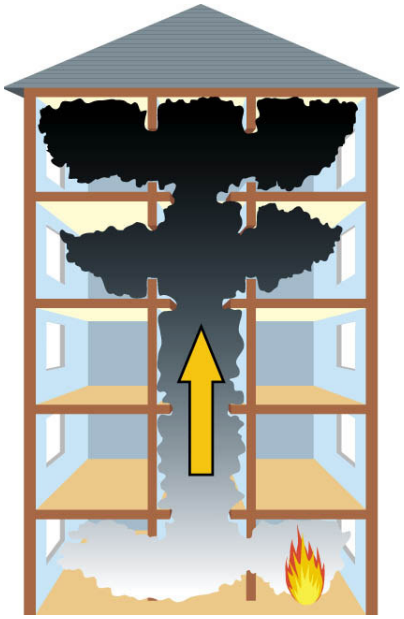

Figure 4 Smoke moving through a building

Smoke produced by a fire also contains toxic gases which are harmful to people. A fire in a building with modern fittings and materials generates smoke that is thick and black, obscures vision, causes great difficulty in breathing and can block the escape routes.

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 you will need to consider situations such as:

- fire starting on a lower floor affecting the only escape route 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 via routes such as vertical shafts, service ducts, linen and waste chutes, ventilation systems, poorly installed, poorly maintained or damaged, walls, partitions and ceilings affecting people in remote areas;
- fire and smoke spreading through a building due to poor installation of fire precautions, eg incorrectly installed fire doors (see Appendix B2 for more information on 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.

3.3 Remove or reduce the hazards that may cause a fire

Having identified the fire hazards in Step 1, you now need to remove those hazards if reasonably practicable to do so. If you cannot remove the hazards, you need to take reasonable steps to reduce them if you can. This is an essential part of fire risk assessment and as a priority this must take place before any other actions.

Ensure that any actions you take to remove or reduce fire hazards or risk are not substituted by other hazards or risks. For example, if you replace a flammable substance with a toxic or corrosive one, you must consider whether this might cause harm to people in other ways.

Remove or reduce sources of ignition

There are various ways that you can reduce the risk caused by potential sources of ignition, for example:

- Operate a safe smoking policy in designated smoking areas and prohibit smoking elsewhere, ensuring sufficient ashtrays are provided and cleaned appropriately.
- 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 electrical, mechanical and gas equipment is installed, used, maintained and protected in accordance with the manufacturer's instructions eg electric blankets, cooking appliances.
- Ensure all electric fuses and circuit breakers are of the correct rating and suitable for the purpose.
- Ensure electric sockets are not overloaded.
- Check all areas where hot work (eg welding) has been carried out to ensure that no ignition has taken place or any smouldering materials remain that may cause of fire.
- Ensure that no-one carrying out work on gas fittings which involves exposing gasways that contain or have contained flammable gas uses any source of ignition such as blow-lamps or hot-air guns.
- Ensure that no-one uses any source of ignition while searching for an escape of gas.
- Operate a permit-to-work system for maintenance contractors who carry out hot work
- Take precautions to avoid arson.

- Remove any unnecessary sources of heat and/or replace with safer alternatives.

Remove or reduce sources of fuel

There are various ways that you can reduce the risks caused by materials and substances which burn, for example:

- Ensure combustible items, such as furniture, laundry, decorations are stored properly and are separate from potential ignition sources, such as boilers.

- Reduce the amount of combustible materials, such as paper products and plastics. Keep spare items in storerooms or storage areas where the public are not allowed to go.

- Make sure staff responsible for cleaning bedrooms are aware of potential fire hazards (e.g. storage, use and disposal of aerosols/ newspapers) that may be brought into rooms by guests and residents and left in a haphazard manner creating a fire risk. You should have a policy in place to deal with this constant hazard.

- Remove or treat large areas of highly combustible wall and ceiling linings, eg polystyrene or carpet tiles, to reduce the rate of flame spread across the surface.

- Reduce or protect combustible displays, furnishings and foliage.

- Develop a formal system for the control of combustible 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.

- Clean ducts and flues.

- Reduce stocks of flammable materials, liquids and gases to a minimum. Keep remaining stock in dedicated storerooms or storage areas, preferably outside, where the public are not allowed to go, and keep the minimum required for the operation of the business.

- Ensure flammable materials, liquids and gases, are kept to a minimum, and are stored properly with adequate separation distances between them.

- Do not keep flammable solids, liquids and gases together.

- Take action to avoid any parts of the premises, and in particular storage areas being vulnerable to arson or vandalism.

- Check all areas where hot work (eg welding) has been carried out to ensure that no ignition has taken place and no smouldering or hot materials remain that may cause a fire later.

Further guidance is given in Part 2, Section 1 on removing and reducing hazards.

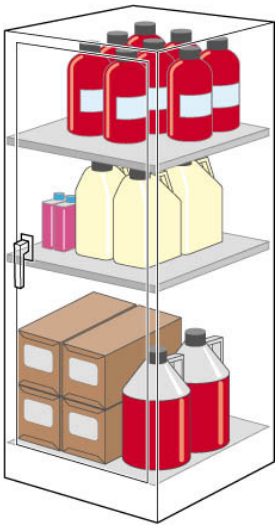

Figure 5 Storage of flammables

Remove or reduce sources of oxygen

You can reduce the potential source of oxygen supplied to a fire by:

- Closing all doors, windows and other openings not required for ventilation, particularly out of working hours;
- Shutting down ventilation systems which are not essential to the function of the premises;
- Not storing oxidising materials near or within any heat source or flammable materials; and
- Controlling the use and storage of oxygen cylinders, ensuring that they are not leaking.,

3.4 Remove or reduce the risks to people from a fire

Having evaluated and addressed the preventive measures it is unlikely that you will have

concluded that there is no risk of fire starting and presenting a risk to people in your premises.

You now need to reduce the remaining fire risk to people to as low as reasonably practicable. The methods available to you to reduce the fire risk are:

- Remove or reduce the risk by limiting the spread of fire and smoke
- Ensure that adequate fire precautions are in place to warn people in the event of a fire and allow them to safely escape.

The rest of this section describes actions you may wish to adopt to reduce the residual fire risk to people (see sections 3.4.1 to 3.4.7).

More detailed guidance on reducing the risk to people can be found in Part 2, Section 1.

The level of fire protection you need to provide will depend on the level of risk that remains in the premises after you have removed or reduced hazard and risks. Part 2 section 4.1 can help you decide the level of risk that you may still have.

Flexibility of fire protection measures

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 building. Therefore, the objective should be to reduce risk to a level as low as reasonably practicable; initially by fire prevention methods. To deal with the residual risk, fire protective measures should be put into place. The higher the risk of fire and risk to life, the higher the standards of fire protection will need to be.

Your premises may not exactly fit the standards normally recommended in this guide and they may need to be applied in a flexible manner without compromising the lives of the occupants.

For example, if the travel distance is in excess of the norm for the level of risk you have determined (see Part 2, Table 4) ,it may be necessary to do any one or a combination of the following to compensate:

- Provide earlier warning of fire using automatic fire smoke detection.
- Revise the layout to reduce travel distances.
- Reduce the fire risk by removing or reducing combustible materials and/or ignition sources.
- Control the number of people in the premises.
- Limit the area to trained staff only (no public).

- Increase staff training and education.

Should you move significantly away from this guidance then you should seek expert advice.

Note: The above list is not exhaustive and is only used to illustrate some examples of trade-offs to provide safe premises.

3.4.1 Fire-detection and warning systems

Virtually all premises that this guide applies to will need an electrical fire detection and warning system incorporating automatic fire detection, sounders and manually operated call points (break-glass boxes).

In premises of limited size/occupation e.g. ground and first floor with a small number of guest/residents, an alternative system of interconnected smoke alarms or point detectors incorporating interconnected manual call points and, where necessary separate sounders may be acceptable.

In complex premises, such as the sleeping areas of hotels, boarding schools or student accommodation, you will probably need an automatic fire detection and warning system with a panel which is able to identify either the zone or the specific location where the alarm has been raised.

In very large or complex premises, particularly those accommodating large numbers of people, such as multi-storey hotels, it is possible that a more sophisticated form of evacuation, e.g. phased evacuation, will be used. In these cases it will be necessary to use an appropriate fire warning system linked to a system for informing people of the action to take (e.g. via a voice alarm system). The voice alarm will need to include the necessary recorded languages.

In the case of flats or maisonettes, built in accordance with the Building Regulations, the common areas are not normally fitted with a fire alarm and detection system, as simultaneous evacuation of the building is unlikely to be necessary. (However, self-contained smoke alarms will normally be fitted within each accommodation unit.) It is assumed that a fire will generally be confined to the dwelling, and that in the common areas there will be good risk reduction and arson reduction measures, the materials and construction of the escape routes should prevent the fabric of the building from being involved, there is a high degree of compartmentation and a low probability of fire spread beyond the dwelling of origin. If your premises have been converted in to flats or a maisonette you will need to ensure they have been altered in accordance with Building Regulations. If you are not sure then you should seek advice from an expert as additional precautions maybe necessary.

Although the main risk will be to people when they are asleep you may still need to consider special arrangements for times when people are working alone, or are disabled or when your

normal occupancy patterns are different, eg maintenance staff or other contractors working at the weekend.

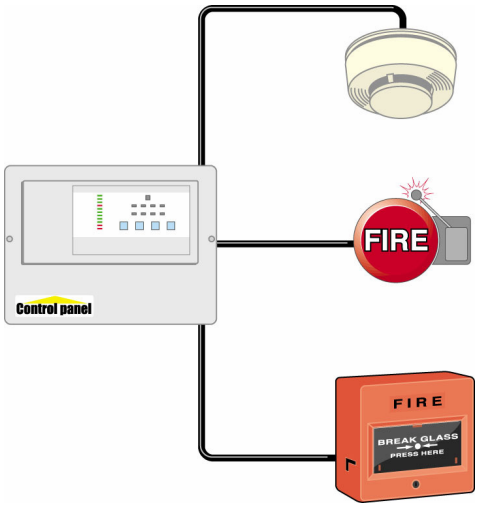

Figure 6 Fire Detection and Warning system

If you are not sure whether your current arrangements are adequate, see the additional guidance on fire warning systems in Part 2, Section 2.

Checklist

- Can the existing means of detection ensure a fire is discovered quickly enough for the alarm to be raised in time for all the occupants to escape to a place of total safety?
- Are the detectors of the right type and in the appropriate locations?
- Can the means of warning be clearly heard and understood by everyone throughout the whole building when initiated from a single point? Are there provisions for people or locations where the alarm can not be heard?
- If the fire-detection and warning system is electrically powered, does it have a back-up power supply?

3.4.2 Fire-fighting equipment

Fire-fighting equipment can reduce the risk of a small fire, eg a fire in a waste-paper bin, developing into a large one. The safe use of an appropriate fire extinguisher to control a fire in its early stages can also significantly reduce the risk to other people in the premises by

allowing persons to assist others who are at risk..

This equipment will need to comprise enough portable extinguishers that must be suitable for the risk.

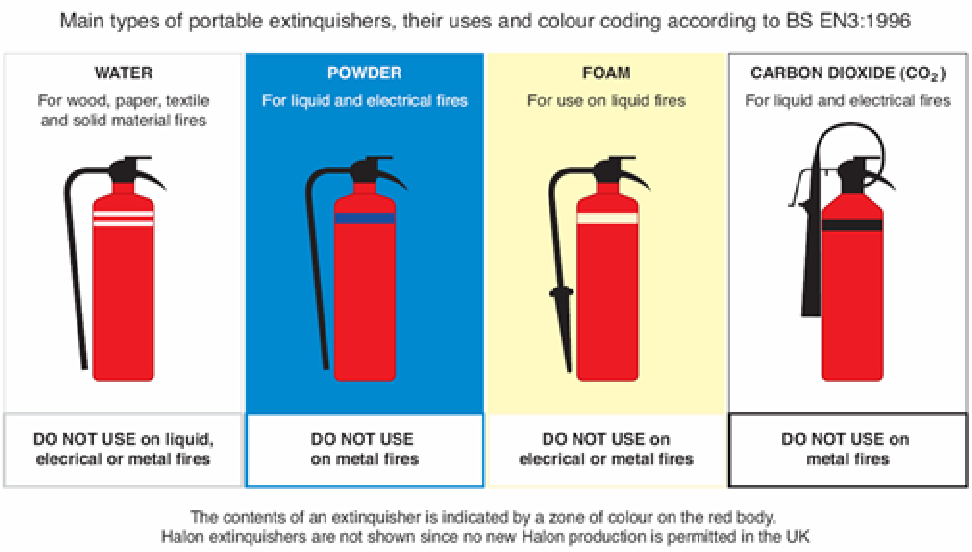

Figure 7 Types of fire extinguishers

In simple premises, having one or two portable extinguishers of the appropriate type, readily available for use, may be all that is necessary. In more complex premises, more portable extinguishers will be required and they should be sited in suitable locations such as on the escape routes at each floor level. It may also be necessary to indicate the location of extinguishers by suitable signs.

Some premises will also have permanently installed fire-fighting equipment or systems such as hose reels, sprinklers or gas flooding systems. Other fixed installations and facilities to assist fire-fighters, such as dry rising mains and access for fire engines, may also have been provided.

People with no training should not be expected to attempt to extinguish a fire. provided, in case they need to use it. If your fire strategy means that certain people, eg fire marshals, will be expected to take a more active role, then they should be provided with more comprehensive training.

For more guidance on portable fire extinguishers and other facilities, see Part 2, Section 3.1 and for fixed fire-fighting installations, Part 2, Section 3.2.

Checklist

- Are the extinguishers suitable for the purpose?
- Are there enough extinguishers sited throughout the premises ?
- Are the right types of extinguishers located close to the fire hazards and can users get to them without exposing themselves to risk?
- Are the extinguishers visible or does their position need indicating?
- Have you taken steps to prevent the misuse of extinguishers?

3.4.3 Escape routes

Once a fire has started, been detected and a warning given, everyone in your premises should be able to escape to a place of total safety unaided and without the help of the fire and rescue service. However, some people with disabilities may need help from staff who will need to be designated for the purpose.

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 to a place of reasonable safety, eg a protected stairway. From there they will be able to go directly to a place of total safety away from the building.

The level of fire protection that should be given to escape routes will vary depending on the level of risk of fire within the premises and other related factors. Generally, premises that are simple, consisting of a single storey, will require fairly simple measures to protect the escape routes, compared to a more complex multi-storey building, which would require a more complex and inter-related system of fire precautions. Where occupants need assistance to evacuate, it must be ensured that there are sufficient staff to ensure a speedy evacuation.

When determining whether your premises have adequate escape routes, you need to consider a number of factors:

- The type and number of people using the premises.
- Escape time.
- The age and construction of the premises.
- The number and complexity of escape routes and exits.
- The use of phased or delayed alarm evacuation

- Assisted means of escape/personal evacuation plans
- Lifts
- Assembly Points

The type and number of people using the premises

The people present in premises such as hotels, motels, guest and boarding houses will consist of members of the public, who may only be present over a short period of time, and staff. Members of the public (and contractors) may have no advance knowledge of your premises and alternative escape routes, and may find way-guidance difficult. They may be slow to respond to an unfamiliar alarm, this may be further impeded by alcohol, drugs or be under medication. They may delay their escape by attempting to get fully dressed, gather other family members together, or collect personal belongings before leaving. Initially, they may believe the situation to be a false alarm, and delay any reaction until directed by a member of staff.

In more residential premises for sleeping accommodation, people can be expected to have more detailed knowledge of the layout of the premises and its escape routes, however the issues of a delayed response, discussed above, should still be assessed. These premises include:

- hostels;
- student & nursing halls of residence;
- family accommodation centres;
- barracks and quarters;
- accommodation at training centres;
- houses in multiple occupation (HMO);
- sheltered accommodation;
- holiday flats;
- flats and maisonettes.

The number and capability of people present will influence your assessment of the escape routes. The number of people likely to use your premises at any time, may be fairly constant, eg in hostels, halls of residence and HMO type premises, but in hotels it can vary from a few people, to large numbers depending on the time of year, conference facilities and other social gatherings.

Escape time

In the event of a fire, it is important to evacuate people as quickly as possible from the premises. Escape routes in a building should be designed so that people can escape quickly enough to ensure they are not placed in any danger from fire. The time available will depend on a number of factors, including, how quickly the fire is detected and the alarm raised, the number of escape routes available, the nature of the occupants and the speed of fire growth. For simplicity the travel distances in Part 2, Table 4 takes these factors into account. Part 2 section 4.1 will help you decide the level of risk in your premises, for escape purposes.

You can carry out a simple assessment of the time it takes to escape to a place of safety by timing how long it takes the slowest person to walk the escape routes from all parts of the premises.

In premises where people are sleeping the escape time is closely linked to how quickly the occupants are aware of a fire. It is essential that when the alarm is raised the occupants can escape to a place of safety within the time available.

Some simplel premises may be unstaffed at night, it is essential that guests/residents know this and are provided with clear instructions.

The age and construction of the premises

The materials from which your premises are constructed, the quality of building work and state of repair could contribute to the speed with which any fire may spread, and potentially affect the escape routes the occupants will need to use. A fire starting in a building constructed mainly from combustible material will spread faster than one where fire-resisting construction materials have been used.

If you wish to construct internal partitions or walls in your premises, perhaps to create a storage area or to divide a bedroom area, you should ensure that any new partition or wall that forms part of the escape routes does not obstruct any escape routes or fire exits, extend travel distances or reduce the sound levels of the fire alarm system. Any walls that affect the means of escape should be constructed of appropriate material (further technical information is provided in Appendix B).

If you wish to change any door, eg a front door to a flat for security reasons, you should ensure that any new door is constructed to appropriate standard and has the appropriate furniture, eg fire resistant and self closing device (further technical information is provided in

Appendix B).

Depending on the findings of your fire risk assessment, it may be necessary to protect the escape routes against fire and smoke by upgrading the construction of the floors, ceiling and walls to be fire-resisting. You should avoid having combustible wall and ceiling covering in your escape routes. For further information see Appendix B. You may need to seek advice from a competent person. Any structural alterations may require building control approval.

The number of escape routes and exits

In general there should normally be at least two escape routes from all parts of the premises but a single escape route may be acceptable from small individual premises within the complex (e.g. part of your premises accommodating less than 60 people). Where two escape routes are necessary and to further minimise the risk of people becoming trapped, you should ensure that the escape routes are completely independent of each other. This will prevent a fire affecting more than one escape route at the same time.

When evaluating escape routes, you may need to build in a safety factor by discounting the largest exit from your escape plan, then determine whether the remaining escape routes from a room, floor or building will be sufficient to evacuate all the occupants within a reasonable time. Escape routes from the premises that consist of a single direction only may need additional fire precautions to be regarded as adequate.

Exit doors on escape routes and final exit doors should normally open in the direction of travel, and be quickly and easily opened without the need for a key. Checks should be made to ensure final exits are wide enough to accommodate the number of people who may use the escape routes they serve.

Checklist

- Is your building constructed, particularly in the case of multi-storey buildings, so that, if there is a fire, heat and smoke will not spread uncontrolled through the building to the extent that people are unable to use the escape routes?

- Are any holes or gaps in walls, ceilings and floors properly sealed, eg where services such as ventilation ducts and electrical cables pass through them?

- Can all the occupants escape to a place of total safety in a reasonable time?

- Are the existing escape routes adequate for the numbers and type of people that may need to use them, eg members of the public, including disabled people?

- Are the exits in the right place and do the escape routes lead as directly as possible to a place of total safety?

- If there is a fire, could all available exits be affected or will at least one route from any part of the premises remain available?

Management of escape routes

Figure 8 A blocked corridor with incorrect signage

It is essential that escape routes, and the means provided to ensure they are used safely, are managed and maintained to ensure that they remain usable and available at all times when the premises are occupied. Tell employees in staff training sessions about the escape routes within the premises.

Corridors and stairways that form part of escape routes should be kept clear and hazard free at all times. Items that may be a source of fuel or pose an ignition risk should never be located on any corridor or stairway that will be used as an escape route. See also Part 2 Section 4.

Emergency evacuation of persons with mobility impairment

The means of escape you provide must be suitable for the evacuation of everyone likely to be in your premises. This may require additional planning and allocation of staff roles – with appropriate training. Provisions for the emergency evacuation of disabled persons may include:

- Stairways

- Evacuation lifts

- Fire-fighting lifts
- Horizontal evacuation
- Temporary refuges
- Ramps.

Use of these facilities will need to be linked to effective management arrangements as part of your emergency plan. The plan should not rely on fire and rescue service involvement for it to be effective.

Checklist

- Are the escape routes and final exits kept clear at all times?
- Do the doors on escape routes open in the direction of escape?
- Can all final exit doors be opened easily and immediately if there is an emergency?
- Will everybody be able to safely use the escape routes from your premises?
- Are the people who work in the building aware of the importance of maintaining the safety of the escape routes, eg by ensuring that fire doors are not wedged open and that combustible materials are not stored within escape routes?
- Are there any particular or unusual issues to consider?

3.4.4 Lighting

People in your premises must be able to find their way to a place of total safety if there is a fire by using escape routes that have enough lighting.

In simple premises, where the escape routes are simple and straightforward, borrowed lighting, eg from street lamps where they illuminate escape routes, may be acceptable. Exceptionally, where borrowed lighting is not available, suitably placed torches may be acceptable.

In complex premises, e.g. large hotels, it is likely that a more comprehensive system of automatic emergency lighting will be needed to illuminate all the escape routes.

Where people have difficulty seeing conventional signs, a ‘way-guidance’ system may need to be considered.

Further guidance is given in Part 2, Section 5 on lighting

Checklist

- Are all your escape routes covered by an acceptable form of emergency lighting?
- Will there always be sufficient lighting to safely use escape routes ?

3.4.5 Signs and notices

Signs

Signs must be used, where necessary, to help people identify escape routes, find fire-fighting equipment and emergency fire telephones. These signs are required under the Health and Safety (Safety Signs and Signals) Regulations 1996[5, 6] and must comply with the provisions of those Regulations.

For a sign to comply with these Regulations it must be in pictogram form. The pictogram can be supplemented by text if this is considered necessary to make the sign more easily understood, but you must not have a safety sign that uses only text.

Where the locations of escape routes and fire-fighting equipment are readily apparent, eg in a hotel foyer, and the fire-fighting equipment is visible at all times, then signs are not necessary. In all other situations it is likely that the fire risk assessment will indicate that signs will be necessary.

Figure 9 Typical fire exit sign

Notices

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 fire, and to
- help the fire and rescue service.

Figure 10 Staff action notice

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

Further guidance is given in Part 2, Section 6 on safety signs and notices.

Checklist

- Where necessary are escape routes and exits, the locations of fire-fighting equipment and emergency telephones indicated by appropriate signs?
- Have you provided notices such as those giving information on how to operate security devices on exit doors, those indicating doors enclosing fire hazards that must be kept shut and fire action notices for staff and other people?
- Are you maintaining all the necessary signs and notices so that they continue to be correct, legible and understood?
- Are you maintaining signs that you have provided for the information of the fire and rescue service, such as those indicating the location of water suppression stop valves and the storage of hazardous substances?

3.4.6 Installation, testing and maintenance

New fire precautions should be installed by a competent person.

You must keep any existing equipment, devices or facilities that are provided in your premises for the safety of people, such as fire alarms, fire extinguishers, lighting, signs, fire exits and fire doors, in effective working order and maintain fire separating elements and prevention of smoke into escape routes.

You must ensure regular checks, periodic servicing and maintenance are carried out whatever the size of your premises and any defects are put right as quickly as possible.

You, or a person you have nominated, can carry out certain checks and routine maintenance work. Further maintenance may need to be carried out by a competent service engineer. Where contractors are used, third party certification is one method where a reasonable assurance of quality of work and competence can be achieved (see Part 2 section 8).

Any significant testing of emergency lighting should be at an appropriate time when, following the test, they will not be immediately required, to allow the back-up battery system to re-charge, eg when the premises are closed.

Further guidance is given in Part 2. Appendix A.1 provides an example of a fire safety maintenance checklist. You will find it of benefit to keep a log book of all maintenance and testing.

The following are examples of checks and tests that should be carried out. You should determine the appropriate period for these checks from your risk assessment.

Daily checks

Check escape routes to ensure they are clear from obstructions and combustible materials. Ensure that doors on escape routes swing freely, close fully and are in a good state of repair. Where security devices are fitted to fire exits, these should be checked for correct operation. Check the fire alarm panel to ensure the system is active and fully operational. Where practicable, visually check that emergency lighting units are in good repair and working. Check that all safety signs and notices are legible.

Weekly tests and checks

Test fire-detection and warning systems and manually-operated warning devices weekly following the manufacturer's or installer's instructions. Check the batteries of safety torches and that fire extinguishers and hose reels are correctly located and in apparent working order.

Monthly tests and checks

Test all emergency lighting systems and safety torches to make sure they have enough charge and illumination according to the manufacturer's or supplier's instructions. This should be at an appropriate time when, following the test, they will not be immediately required.

Are all fire doors in good working order, closing correctly and are the frames and seals intact?

Six-monthly tests and checks

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

Annual tests and checks

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. Specific guidance on the maintenance of timber fire resisting doors is given in Appendix B2.

Checklist

- Do you regularly check all fire doors and escape routes and associated lighting and signs?
- Do you regularly check all your fire-fighting equipment?
- Do you regularly check your fire-detection and alarm equipment?
- Are those who test and maintain the equipment competent to do so?
- Do you keep a log book to record tests and maintenance?

3.4.7 Other equipment and facilities, including those for fire-fighters

In some premises, fixed equipment such as sprinklers, smoke and heat exhaust systems (SHEVS), gaseous fire-extinguishing systems, and facilities such as rising fire mains, fire lifts and access for fire engines may have been provided.

Where these have been required by law, eg the Building Regulations or local Acts, such equipment and facilities must be maintained.

Similarly, if provided for other reasons, eg insurance, it is good practice to ensure that they are properly maintained to minimise the risk of injury if they malfunction or fail.

Note: The examples of testing and maintenance given are not intended to be prescriptive and other testing regimes may be appropriate.

In most cases it will be necessary to consult a competent service engineer. See Part 2

Section 3 for further information. Keeping records of the maintenance carried out will help you demonstrate to the enforcing authority that you have complied with fire safety law.

Appendix A.1 provides a sample fire safety maintenance checklist you can use.

Checklist

- Do you regularly check any other equipment provided to help maintain the escape routes?
- Do you carry out daily checks to ensure that there is clear access for fire engines?
- Are those who test and maintain the equipment competent to do so?
- Do you have the necessary procedures in place to maintain any facilities that have been provided for the safety of people in the building and for the use of fire-fighters, including access for fire engines and lifts?

Step 3 checklist Evaluate, remove, reduce and protect from risks

Evaluate, remove, reduce and protect from risks by

- Evaluating the risk to people in your building if a fire starts
- Removing or reducing the hazards that might cause a fire

Have you

Removed or reduced sources of ignition?

Removed or reduced sources of fuel?

Removed or reduced sources of air or oxygen?

Have you removed or reduced the risks to people if a fire occurs by

Considering the need for fire detection and for warning?

Considering the need for fire-fighting equipment?

Determining whether your escape routes are adequate?

Determining whether your lighting and emergency lighting are adequate?

Checking that you have adequate signs and notices?

Regularly testing and maintaining safety equipment?

Considering whether you need any other equipment or facilities?

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

In Step 4 there are four further elements of the risk assessment you should focus on to address the management of fire safety in your premises. In some premises with simple layouts this could be done as part of the day-to-day management, however, as the premises or the organisation get larger it may be necessary for a formal structure and written policy to be developed. Further guidance is given in Part 2, Section 7 for more details.

4.1 Record the significant findings and action taken

If your organisation employs five or more people, your premises are licensed, or an alterations notice requiring you to do so is in force, you must record the significant findings of your fire risk assessment and the actions you have taken.

Significant findings should include details of:

- The fire hazards you have identified (you don't need to include trivial things like a tin of solvent based glue)
- The actions you have taken or will take to remove or reduce the chance of a fire occurring (preventive measures)
- Persons who may be at risk, particularly those especially at risk
- The actions you have taken or will take 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 (your emergency plan)
- The information, instruction and training you have identified that people need and how it will be given

You may also wish to record discussions you have had with staff or staff representatives (including trade unions)

Even where you are not required to record the significant findings, it is good practice to do so.

In some simple premises, record keeping may be no more than a few sheets of paper (possibly forming part of a health and safety folder), containing details of significant findings, any action taken and a copy of the emergency plan.

The record could take the form of a simple list which may be supported by a simple plan of the premises. Appendix A.2 provides an example pro forma record of significant findings which you can use.

In more complex premises, it is best to keep a dedicated record including details of significant findings, any action taken, a copy of the emergency plan, maintenance of fire-protection equipment and training. There is no one 'correct' format specified for this. Further guidance is given in Part 2, Section 7.1

You must be able to satisfy the enforcing authority, if called upon to do so, that you have carried out a suitable and sufficient fire risk assessment. Keeping records will help you do this and will also form the basis of your subsequent reviews. If you keep records, you do not need to record all the details, only those that are significant and the action you have taken.

Fire hazards identified	**Actions taken to remove or reduce the risk of a fire occurring**	**People who are at risk**	**Actions taken to reduce the risk from the spread of fire**	**Actions people need to take in case of fire**	**Train, inform, instruct and co-ordinate**
Deep fat fryer in kitchen	Safety lid fitted, to the fryer	Residents and staff	Fire blanket provided Appropriate fire extinguisher provided	Call the fire brigade and evacuate	Residents not allowed to use fat fryer until general fire safety training given

High levels of smoking in bedrooms.	No smoking policy in most rooms In designated smoking rooms, provision of ashtrays	Residents and staff	Sprinkler system installed in each bedroom.	Call the fire brigade and evacuate	System maintained and tested each year by installer.

Figure 11 Example of a simple method of recording the significant findings of your fire risk assessment

The findings of your fire risk assessment will help you to develop your emergency plan, the instruction, information and training you need to provide, the co-operation and co-ordination arrangements you may need to have with other responsible people and the arrangements for maintenance and testing of the fire precautions. If you are required to record the significant findings of your fire risk assessment then these arrangements must also be recorded.

Further guidance is given in Part 2, Section 7.1 with examples of recording.

Checklist

- Have you recorded the significant findings of your assessment?
- Have you recorded what you have done to remove or reduce the risk?
- Are your records available for inspection by the enforcing authority?

4.2 Prepare an emergency plan

The purpose of an emergency plan is to ensure that people know what to do if there is a fire and that the premises can be safely evacuated.

If your organisation employs five or more people, or your premises are licensed or an alterations notice requiring it is in force, then details of your emergency plan must be recorded. Even if it is not required, it is good practice to keep a record.

Your emergency plan should be based on the outcome of your fire risk assessment and be available for your employees, their representatives (where appointed) and the enforcing authority.

In simple premises the emergency plan may be no more than a fire action notice.

In multi-occupied and more complex premises, the emergency plan will need to be more detailed and compiled only after consultation with other responsible people, eg owners, who have control over the building. In most cases this means that an emergency plan covering the whole building will be necessary. It will help if you can agree on one person to co-ordinate this task.

Your emergency plan should be appropriate to your premises and could include:

- how people will be warned if there is a fire;
- what staff/wardens should do if they discover a fire;
- what guests/residents should do if they discover a fire;
- how the evacuation of the premises should be carried out;
- where persons should assemble after they have left the premises and procedures for checking whether the premises have been evacuated;
- procedure where there are no staff eg HMO, sheltered accommodation;
- identification of key escape routes, how people can gain access to them and escape from them to a place of total safety;
- arrangements for fighting the fire;
- the duties and identity of staff who have specific responsibilities if there is a fire;
- assess adequacy of numbers of staff required to supervise and assist, their physical limitations, their normal location or workstation in premises. evacuation plans of the disabled/special provisions for evacuation
- arrangements for the safe evacuation of people identified as being especially at risk, such as those with disabilities, children, visitors and contractors;
- any machines/appliances/power supplies that need to be stopped or isolated if there is a fire;
- specific arrangements, if necessary, for high-fire-risk areas;
- contingency plans (eg restrictions on the use of the building) for when life safety systems are out of order, eg evacuation lifts, fire-detection and alarm systems, sprinklers or smoke control systems;
- contingency plans including alternative accommodation for those evacuated;

- how the fire and rescue service and any other necessary services will be called and who will be responsible for doing this;
- procedures for meeting the fire and rescue service on their arrival and notifying them of any special risks, eg the location of highly flammable materials;
- liaison between building owners, employers, managing agents, other occupiers, residents and the fire and rescue services.

As part of your emergency plan it is good practice to prepare post-incident plans that include the following:

- Unaccompanied children;
- People with personal belongings (especially valuables) still in the building;
- People in a state of undress (eg swimmers);
- People wishing to rejoin friends;
- Getting people away from the building (eg to transport)
- Inclement weather.

It might be helpful to include a simple line drawing. This can also help you check your fire precautions as part of your ongoing review.

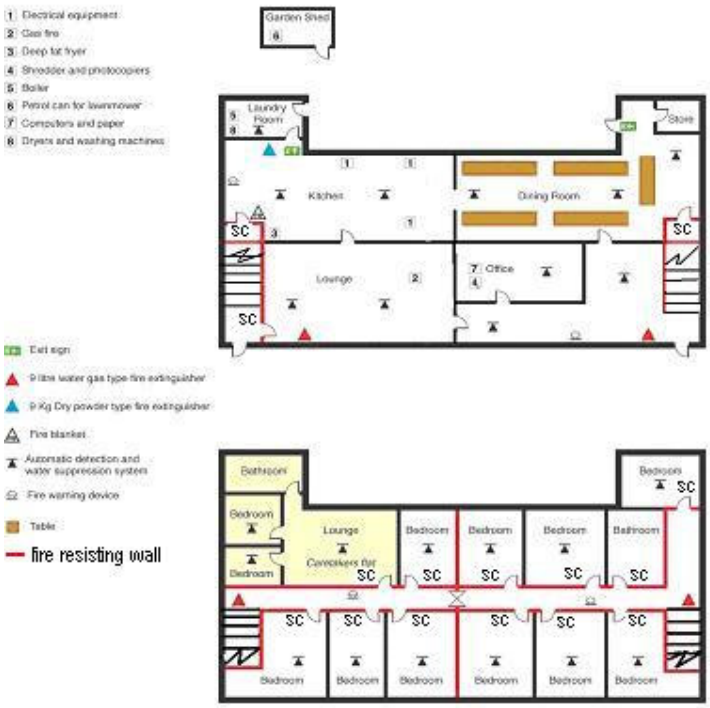

Figure 12 Example of a line drawing showing general fire safety precautions

Checklist

- Do you have an emergency plan and, where necessary, have you recorded the details?
- Does your plan take account of other emergency plans applicable to the same building?
- Is the plan readily available for staff to read?
- Is the emergency plan available to the enforcing authority?

4.3 Inform, instruct, co-operate and co-ordinate

You must give comprehensible and relevant information and appropriate instructions to your staff and the employers of other people working in your premises, such as contractors, about how to prevent fires and what they should do if there is a fire.

If you intend to employ a child, you must inform the parents of the significant risks you have identified and the precautions you have taken. You must also co-operate and co-ordinate with

other responsible people who use any part of the premises. It is unlikely that your emergency plan will work without this.

Information and instruction

All staff should be given information and instruction as soon as possible after they are appointed and regularly after that. Make sure you include staff who work outside normal working hours, such as night staff, contract cleaners or maintenance staff.

All other relevant persons should be given information and instruction as soon as possible, eg residents when they take up residency, guests when they register.

The information and instructions you give must be in a form that can be used and understood. They should take account of those with disabilities such as hearing or sight impairment, those with learning difficulties and those who do not use English as their first language.

The information and instruction you give staff should be based on your emergency plan and must include:

- the significant findings from your fire risk assessment;
- the measures that you have put in place to reduce the risk;
- what staff should do if there is a fire;
- the identity of people you have nominated with responsibilities for fire safety;
- any special arrangements for serious and imminent danger to persons from fire.

In simple premises, where no significant risks have been identified and there are limited numbers of guest/residents, information and instruction may simply involve an explanation of the fire procedures and how they are to be applied. This should include showing staff the fire-protection arrangements, including the designated escape routes, the location and operation of the fire-warning system and any other fire-safety equipment provided, such as fire extinguishers. Fire action notices can complement this information and where used, should be posted in prominent locations.

In complex premises, particularly those in multi-occupied buildings, you should insure that written instructions are given to people who have been nominated to carry out a designated safety task, such as calling the fire and rescue service or checking that exit doors are available for use.

Further guidance is given in Part 2, Section 7.3 on information and instruction to staff, and on working with dangerous substances.

Co-operation and co-ordination

In premises that are not multi-occupied you are likely to be solely responsible. However, in buildings owned by someone else, or where there is more than one occupier, and others are responsible for different parts of the building, it is important that you liaise with them and inform them of any significant risks that you have identified. By liaising you can co-ordinate your resources to ensure that your actions and working practices do not place others at risk if there is a fire, and a co-ordinated emergency plan operates effectively.

Where two or more responsible persons share premises in which an explosive atmosphere may occur, the responsible person with overall responsibility for the premises must co-ordinate any measures necessary to protect everyone from any risk that may arise. Employees also have a responsibility to co-operate with their employer so far as it is necessary to help the employer comply with any legal duty.

Further guidance is given in Part 2, Section 7.3 on co-operation and co-ordination.

Checklist

- Have you told your staff about the emergency plan, including the identity of people you have nominated to do a particular task?
- Have you informed residents and guests about what to do in an emergency?
- Have you given staff information about any dangerous substances?
- Do you have arrangements for informing temporary or agency staff?
- Do you have arrangements for informing other employers whose staff are guest workers in your premises, such as maintenance contractors and cleaners?
- Have you co-ordinated your fire safety arrangements with other responsible people and with any contractors in the building?
- Have you recorded details of any information or instructions you have given and the details of any arrangements for co-operation and co-ordination with others?

4.4 Fire safety training

You must provide adequate fire safety training for your staff. The type of training should be based on the particular features of your premises including any ancillary accommodation and

should:

- take account of the findings of the fire risk assessment;
- explain your emergency procedures;
- take account of the work activity and explain the duties and responsibilities of staff;
- take place during normal working hours and be repeated periodically where appropriate;
- be easily understandable by your staff and other people who may be present;
- address the roles of staff and others (guest, residents);
- be tested by fire drills.

In simple premises, eg small hostel this may be no more than showing new staff and long term residents the fire exits and giving basic training on what to do if there is a fire. In complex premises, such as hotels with a high staff turnover and shift patterns, the organisation of fire safety training will need to be more formal, eg by an induction course.

Your staff training should include the following:

- what to do on discovering a fire;
- how to raise the alarm and what happens then;
- what to do upon hearing the fire alarm;
- the procedures for alerting guest, residents and visitors including, where appropriate, directing them to exits;
- the arrangements for calling the fire and rescue service;
- the evacuation procedures for everyone to reach an assembly point at a place of total safety;
- the location and, when appropriate, the use of fire-fighting equipment;
- the location of escape routes, especially those not in regular use;
- how to open all emergency exit doors;
- the importance of keeping fire-doors closed to prevent the spread of fire, heat and smoke;

- where appropriate, how to stop machines and processes and isolate power supplies in the event of a fire;
- the reason for not using lifts (except those specifically installed or nominated, following a suitable fire risk assessment);
- the safe use of and risks from storing or working with highly flammable and explosive substances;
- the importance of general fire safety, which includes good housekeeping.

All the employees identified in your emergency plan that have a supervisory role if there is a fire (eg heads of department, fire marshals or wardens and, in complex premises, fire parties or teams), should be given details of your fire risk assessment and receive additional training.

Further guidance is given in Part 2, Section 7.4 on training needs and for examples of how to carry out a fire drill.

Checklist

- Has your staff received any fire safety training?
- Have you carried out a fire drill recently?
- Are employees aware of specific tasks if there is a fire?
- Are you maintaining a record of training sessions?
- Do you carry out joint training and fire drills in multi-occupied buildings?
- If you use or store hazardous or explosive substances have your staff received appropriate training?

Step 5 Review

You should constantly monitor what you are doing to implement the fire risk assessment, to assess how effectively the risk is being controlled.

If you have any reason to suspect that your fire risk assessment is no longer valid or there has been a significant change in your premises that has affected your fire precautions, you will need to review your assessment and if necessary revise it. Reasons for review could include:

- change of use, eg hotel to hostel or hall of residence to residential conference centre;

- changes to work activities or the way that you organise them, including the introduction of new equipment;
- alterations to the building, including the internal layout;
- substantial changes to furniture and fixings;
- the introduction, change of use or increase in the storage of hazardous substances;
- the failure of fire precautions, eg fire-detection systems and alarm systems, life safety sprinklers or ventilation systems;
- problems reported by staff and/or residents;
- significant changes to displays or quantities of stock;
- a significant increase in the number of people present;
- the presence of people with some form of disability.

You should consider the potential risk of any significant change before it is introduced. It is usually more effective to minimise a risk by, for example, ensuring adequate, appropriate storage space for an item before introducing it to your premises.

Do not amend your assessment for every trivial change, but if a change introduces new hazards you should consider them and, if significant, do whatever you need to do to keep the risks under control. In any case you should keep your assessment under review to make sure that the precautions are still working effectively. You may want to re-examine the fire prevention and protection measures at the same time as your health and safety assessment.

If a fire or 'near miss' occurs, this could indicate that your existing assessment may be inadequate and you should carry out a re-assessment. It is good practice to identify the cause of any incident and then review and, if necessary, revise your fire risk assessment in the light of this.

Records of testing, maintenance and training etc are useful aids in a review process. See Appendix A.1 for an example.

Alterations notices

If you have been served with an 'alterations notice' check it to see whether you need to notify the enforcing authority about any changes you propose to make as a result of your review. If these changes include building work, you should also consult a building control body.

End of Part 1

You should now have completed the five-step fire risk assessment process, using the additional information in Part 2 where necessary. In any review you may need to revisit Steps 1 to 4.

Part 2 Further information on fire risk assessment and fire precautions

Managing fire safety

Good management of fire safety in your premises is essential to ensure that any fire safety matters that arise are always effectively addressed. In small premises this can be achieved by the manager or owner maintaining and planning fire safety in conjunction with general health and safety.

In larger premises it is good practice for a senior manager to have overall responsibility for fire safety. It may be appropriate for this responsibility to be placed with the manager designated with overall responsibility for health and safety.

An organisation's fire safety policy should be flexible enough to allow modification. This is particularly important when local managers have to function daily with other businesses in the same building. It should be recognised that fire safety operates at all levels within an organisation and therefore local managers should be able to develop, where necessary, a local action plan for their premises.

The company policy should be set out in writing and may cover such things as:

- who will hold the responsibility for fire safety at board level;
- who will be the responsible person for each of their premises (this will be the person who has overall control, usually the manager);
- the arrangement whereby managers will, where necessary, nominate in writing specific people to carry out particular tasks if there is a fire;
- the arrangement whereby regional or area managers should monitor and check that individual managers are meeting the requirements of the fire safety law.

You should have a plan of action to bring together all the features you have evaluated and noted from your fire risk assessment so that you can logically plan what needs to be done. It should not be confused with the emergency plan, which is a statement of what you will do if there is a fire.

The plan of action should include what you intend to do to reduce the hazards and risks you have identified and to implement the necessary protection measures.

You will need to prioritise these actions to ensure that any findings which identify people in immediate danger are dealt with straight away. In other cases where people are not in immediate danger but action is still necessary, it may be acceptable to plan this over a period of time.

The guidance in Part 2 provides additional information to:

- ensure good fire safety management by helping you establish your fire prevention measures, fire precautions and fire safety procedures (systems equipment and plans)
- assist you carry out your fire safety risk assessment and identify any issues that need attention.

Section 1 Further guidance on fire risks and preventative measures

This section provides further information on evaluating the risk of a fire and its prevention in your premises. You should spend time developing long-term workable and effective strategies to reduce hazards and the risk of a fire starting. At its simplest this means separating flammable materials from ignition sources.

You should minimise fire hazards by considering:

- housekeeping (ignition and fuel);
- laundries;
- kitchen areas;
- storage;
- dangerous substances, storage, display and use;
- equipment and machinery;
- electrical safety;
- safety of gas pipework and gas appliances;
- smoking;

- managing building work and alterations;

You should minimise risk to people by considering:

- existing layout and construction;
- housekeeping (particular hazards in corridors and stairways used as escape routes);
- combustible insulated core panels;
- restricting the spread of fire and smoke (flame-retardant, fire-resisting structures,smoke control arrangements);
- arson;
- people especially at risk.

1.1 Housekeeping

The accumulation of combustible materials in premises that provide sleeping accommodation should be carefully monitored.

In hotels, boarding houses and similar premises, the nature of guests and their daily routine of coming and going will require adequate systems to be developed so as to manage the accumulation of waste and laundry. The movement of clean linen, old newspapers and spare or 'put-me-up' beds, should be controlled to ensure that the premises are left in a safe condition, eg by avoiding temporary or permanent storage in escape routes.

In family group homes the need to avoid an institutional appearance will mean that combustible material will often remain in the premises. However, such material should not be allowed to accumulate in the escape routes and this should form part of your considerations when carrying out the fire risk assessment.

Waste material should be kept in suitable containers prior to removal from the premises. If bins, particularly wheeled bins, are used outside they should be secured in a compound to prevent them being moved to a position next to the building and set on fire. Skips should never be placed against a building and should normally be a minimum of six metres away from any part of the premises.

Good housekeeping is essential to reduce the chances of escape routes being blocked, see Part 2, section 1.11.

Escape routes need to be maintained free from obstruction, such as laundry, temporary storage of furniture, goods, materials, equipment, large displays and rubbish. In particular fire

doors and final exits should be regularly inspected to make sure that they are openable and not obstructed. Seating areas should not be provided within escape routes and floor surfaces within escape routes should be maintainable, even and slip-resistant.

Figure 14 Bins under a stairway (courtesy of Cheshire Fire Service)

1.2 Laundries

Laundries are a high risk area and are often located in the basement which means that any fire may affect the escape routes above. The use of laundry chutes provide a ready path for smoke from any fire to travel throughout the residential areas of the premises. Smoke and fire dampers within the laundry chute should be automatically operated following activation of fire detection devices within the chute.

Washing and drying machines should not be loaded in excess of the manufacturer's recommendations, exhaust filters should be cleaned and maintenance carried out regularly. Items such as cleaning cloths and mop heads placed in the dryers can spontaneously combust if there is any chemical residue left on them.

In situations where residents use facilities provided (e.g. self catering accommodation), you need to inform residents of correct procedures to prevent any fire risk. This can be achieved by signage in the laundry area.

Ironing equipment should be correctly used and maintained. Where ironing equipment is temporarily issued for use, eg in a hotel room, guests should be advised how to prevent any fire risks.

The laundry area should not be used for storing miscellaneous combustible material.

1.3 Kitchen areas

In premises with extensive catering facilities (e.g. a hotel), the cooking range should have some form of automatic fire suppression system and deep fat cooking equipment should have

thermostatic temperature control. In smaller premises (eg a kitchen in a shared house) a suitable fire extinguisher and fire blanket should be provided. Extractor ducting, grease traps and filters should be regularly cleaned and maintained. Isolation switches for gas and electricity supplies, and any extractor fans should be located near to an exit.

Cooking equipment should never be left unattended. There are approximately 10,000 chip pan fires every year*. In some premises, such as houses in multiple occupation and hostels, you should consider prohibiting the use of 'open top chip pans'.

Where guests/residents are allowed to use their own equipment, or in self catering accommodation where facilities are provided, cooking should only take place in designated areas and guest/residents should be advised how to prevent any fire risks.

Flambé cooking should be carried out in areas away from other combustible material.

1.4 Storage

If your premises have inadequate or poorly managed storage areas then the risk of fire is likely to be increased. The more combustible materials you store the greater the source of fuel for a fire. Poorly arranged storage could prevent equipment such as sprinklers working effectively.

Combustible materials are not just those generally regarded as highly combustible, such as polystyrene beads, but all materials that will readily catch fire, eg cleaning rags or artificial flower displays. However, by carefully considering the type of material, the quantities kept and the storage arrangements, the risks can be significantly reduced.

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* **ODPM Fire Statistics 2001**

Figure 15 Picture of poor storage in shop

Do not pile combustible material against electrical equipment or heaters, even if turned off for the summer, and do not allow smoking in those areas.

To reduce the risk, store combustible materials in a dedicated storage area, eg baggage storage, linen storage, reserve furniture storage, storeroom or cupboard that are fire resisting. Do not store material in escape routes or areas where the public would normally have access.

Consider how combustibles are arranged. For example large quantities of clothing on vertical hangers would present a greater risk of rapid fire development than clothing arranged in a pile.

Your fire risk assessment should also consider any additional risk generated by seasonal products such as fireworks and Christmas decorations.

Consider the following to reduce these risks:

- ensure you have sufficient storage areas for your needs;
- ensure storage and display areas are adequately controlled and monitored;
- use fire-retardant display materials wherever possible (suppliers should be able to provide evidence of this);
- ensure electrical lighting used as part of the display does not become a potential source of ignition.

1.5 Dangerous substances; storage, display and use

Specific precautions are required when handling and storing these to minimise the possibility of an incident. Your supplier should be able to provide detailed advice on safe storage and handling, however, the following principles will help you reduce the risk from fire:

- substitute highly flammable substances and materials with less flammable ones;
- reduce the quantity of dangerous substances to the smallest reasonable amount necessary for running the business or organisation;
- correctly store dangerous substances, eg in a fire-resisting enclosure. All flammable liquids and gases should ideally be locked away, especially when the premises are unoccupied, to reduce the chance of them being used in an arson attack;
- ensure that you and your employees are aware of the fire risk the dangerous substances present and the precautions necessary to avoid danger.

Additional general fire precautions may be needed to take account of the additional risks that may be posed by the storage and use of these substances.

Certain substances and materials are by their nature, highly flammable, oxidising or potentially explosive. These substances are controlled by other legislation in addition to fire safety law, in particular the Dangerous Substances and Explosive Atmospheres Regulations 2002[7] (also see HSE's *Approved Code of Practice and guidance*[8])

Flammable liquids

Highly flammable liquids present a particularly high fire risk. For example, a leak from a container of flammable solvents, such as acetone, may produce large quantities of heavier-than-air flammable vapours. These can travel large distances, increasing the likelihood of their reaching a source of ignition well away from the original leak, such as a basement containing heating plant and/or electrical equipment on automatic timers. The risk is reduced by ensuring the storage and use of highly flammable liquids is carefully managed, that materials contaminated with solvent are properly disposed of and when not in use, they are safely stored. Up to 50 litres may be stored in a fire-resisting cabinet or bin that will contain any leaks.

Figure 16 A fire-resisting pedal bin for rags

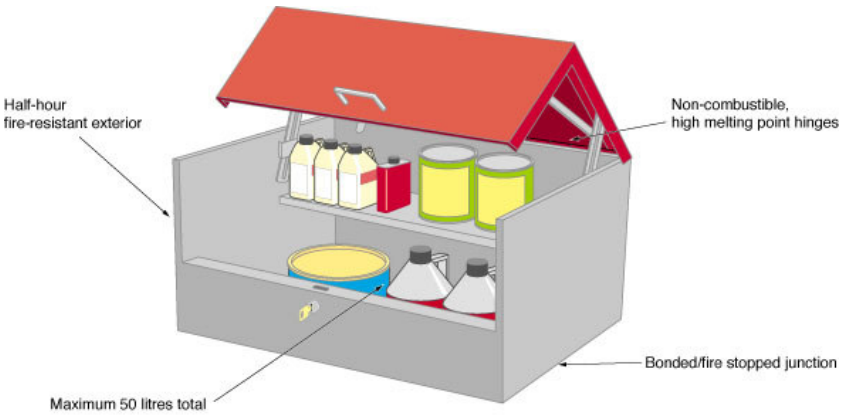

Figure 17 A 50 litre flammable storage bin

There should be no potential ignition sources in areas where dangerous substances are used or stored and flammable concentrations of vapours or dusts may be present. Any electrical equipment used in these areas, including fire alarm and emergency lighting systems, needs to be suitable for use in flammable atmospheres. In such situations, it is recommended that you seek expert advice.

LPG

Where LPG in cylinders or cartridges are present, you need to take particular care to minimise the possibility of its involvement in a fire. The total stock of LPG should be kept to the minimum necessary to meet your needs. Keep LPG cylinders, both full and empty, separate from other flammable and incompatible materials, in a safe and secure location,

either in the open air or in a properly constructed and adequately ventilated storeroom.

In no circumstances should it exceed 15 kg, unless the cylinders are stored in a compartment that provides at least 60 minutes fire resistance, which should be kept in a safe place, where they cannot be interfered with, and away from stairways, exit doors and places where they might obstruct means of escape.

Where there are accommodation areas or retail premises within the building, holding LPG cylinders and cartridges, the maximum stock should not exceed 70 kg.

Stock in excess of 70 kg should be in a properly designed and located storage area away from the premises, or in a building that is dedicated for LPG. Advice on the use of LPG for heating is given below (Section 1.7).

Further guidance on the safe storage of LPG is available from your supplier or the Liquefied Petroleum Gas Association's Code of Practice.[9]

Aerosols

Some aerosol cans contain flammable products stored at pressure. They can present a high hazard. When ignited, they can explode, produce fireballs and rocket to distances of 40m. Their presence in a premises can make it unsafe for fire-fighters to enter a building and they have the potential for starting multiple fires.

The following should be considered to reduce these risks:

- All staff involved in the use and storage of flammable aerosols should be aware of the potential fire hazard.
- Damaged and leaking aerosols should be removed immediately to a safe secure well ventilated place. Arrangements should be made for its safe disposal at a licensed waste management facility.
- Segregation of aerosols from other items, where possible in a fire resisting enclosure or by caging.

Hazardous materials

Where it is necessary to utilise hazardous materials, such as fuels (whether in containers or within fuel tanks and machinery), fertilisers, weed killers, paints or gas cylinders used for medical purposes, they should be stored in a secure and safe location, for example a properly ventilated fire-resistant storeroom. Care should also be taken to ensure that incompatible materials are not stored together. If in any doubt you should seek the advice of your supplier.

1.6 Equipment and machinery

Common causes of fire in equipment are:

- allowing ventilation points to become clogged or blocked, causing overheating, eg driers;
- inadequate cleaning of equipment, such as fryers and toasters;
- allowing extraction equipment in catering environments to build up excessive grease deposits;
- disabling or interfering with automatic or manual safety features and cut-outs;
- leaking valves, glands or joints allowing oils and other flammable liquids to contaminate adjacent floors or goods.

A competent person should adequately and regularly maintain machinery, equipment and plant, including cooking appliances and heating equipment. Appropriate signs and instructions on safe use may be necessary.

Heating

Individual heating appliances require particular care if they are to be used safely, particularly those which are kept for emergency use during a power cut or as supplementary heating during severe weather. The greatest risks arise from lack of maintenance and staff unfamiliarity with them. Heaters should be secured in position when in use and fitted with a fire guard if appropriate.

As a general rule, convector or fan heaters should be preferred to radiant heaters because they present a lower risk of fire and injury. The following rules should be observed:

- All heaters should be kept well clear of combustible materials and where they do not cause an obstruction;
- Heaters which burn a fuel should be sited away from draughts;
- Portable fuel burning heaters (including LPG) should only be used in public areas in exceptional circumstances and if shown to be acceptable in your risk assessment.

All gas heating appliances should be used only in accordance with manufacturer's instructions and should be serviced annually by a competent person.

In general, residents/guest/staff should be discouraged from bringing in their own portable heaters, and other electrical equipment (e.g. kettles) into the premises. The frequent use of boiler rooms to store combustible materials should be curtailed.

1.7 Electrical safety

Electrical equipment is a significant cause of accidental fires. The main causes are:

- incorrect fuse ratings
- overheating cables and equipment due to overloading circuits;
- overheating cables and equipment due to equipment left on, eg irons, kettles, electric blankets;
- incorrect installation or use of equipment, and poor servicing and maintenance;.
- damaged or inadequate insulation on cables or wiring;
- combustible materials being placed too close to electrical equipment which may give off heat even when operating normally or may become hot due to a fault, eg trouser presses in wardrobes.
- arcing or sparking by electrical equipment.
- overheating cables due to retention in a coil;
- lack of maintenance or testing.

All electrical equipment should be installed and maintained in a safe manner by a competent person. If portable electrical equipment is used, including items brought into a workplace by employees, then your fire risk assessment should ensure that it is visually inspected and undergoes portable appliance testing ('PAT') at intervals suitable for the type of equipment and its frequency of use (refer to HSE guidance[10]). If you have any doubt about the safety of your electrical installation then you should consult a competent electrician.

Issues to consider include:

- Overloading of equipment, correct fuse ratings;
- PAT testing and testing of the fixed installation;
- Protection against overloading of installation

- Protection against short circuit
- Insulation, earthing and electrical isolation requirements
- Frequency of electrical inspection and test
- Temperature rating and mechanical strength of flexible cables
- Portable electrical equipment, including lanterns
- Physical environment in which the equipment is used (eg wet or dusty atmospheres)
- Suitable use and maintenance of personal protective equipment

All electrical installations should be regularly inspected by a competent electrical engineer appointed by you, or on your behalf, in accordance with the Electricity at Work Regulations 1989 (EAW Regulations) [Ref I]. The use of low voltage equipment should conform to the requirements of the Electrical Equipment (Safety) Regulations 1994 [Ref J], including the requirement to be CE marked.

1.8 Smoking

Carelessly discarded cigarettes and other smoking materials are a major cause of fire. A cigarette can smoulder for several hours, especially when surrounded by combustible material. Many fires are started several hours after the smoking materials have been emptied into waste bags and left for future disposal.

Consider prohibiting smoking in your premises other than in the designated smoking areas. Display suitable signs throughout the premises informing people of the smoking policy and the locations where smoking is permitted.

In those areas where smoking is permitted, provide ashtrays that are non-combustible and not easy to knock over spill, ie deep and substantial ashtrays, to help prevent unsuitable containers being used. Empty all ashtrays daily into a metal waste bin and take it outside. It is dangerous to empty ashtrays into plastic waste sacks which are then left inside for disposal later.

1.9 Managing building work and alterations

Fires are more frequent when buildings are undergoing refurbishment or alteration.

You should ensure that, before any building work starts, you have reviewed the fire risk assessment and considered what additional dangers are likely to be introduced. You will need to evaluate the additional risks to people, particularly in those buildings that continue to be occupied. Lack of pre-planning can lead to haphazard co-ordination of fire safety measures.

You should liaise and exchange information with contractors who will also have a duty under the Construction (Health, Safety and Welfare) Regulations 1996[11, 12] to carry out a risk assessment and inform you of their significant findings and the preventive measures they may employ. This may be supported by the contractors' agreed work method statement. The designer should also have considered fire safety as part of the Construction (Design and Management) regulations 1994 (The CDM Regulations) [Ref K].

You should continuously monitor the impact of the building work on the general fire safety precautions, such as the increased risk from quantities of combustible materials and accumulated waste and maintaining adequate means of escape. You should only allow the minimum materials necessary for the work in hand within or adjacent to your building.

Additional risks can include:

- hot work including paint stripping;
- temporary electrical equipment;
- blocking of escape routes including external escape routes;
- loss of normal storage facilities;
- fire safety equipment, such as automatic fire-detection systems becoming affected;
- fire-resisting partitions being breached or fire-doors being wedged open (see Appendix B1 for information on fire-resisting separation);
- additional personnel who may be unfamiliar with the premises.

Activities such as welding, flame cutting, use of blow lamps or portable grinding equipment can pose a serious fire hazard and need to be strictly controlled when carried out in areas near flammable materials. This can be done by having a written permit to work for the people involved (whether they are your employees or those of contractor)[12]

A permit to work is appropriate in situations of high hazard/risk and, for example, where there is a need to:

- ensure that there is a formal check confirming that a safe system of work is being followed;
- co-ordinate with other people or activities;
- provide time-limits when it is safe to carry out the work;
- provide specialised personal protective equipment (such as breathing apparatus) or methods of communication;
- check that contractors have a policy in place with respect to a smouldering fire. You should inspect areas before each night.

Additional risks can include:

- hot work including paint stripping;
- temporary electrical equipment;
- blocking of escape routes including external escape routes;
- introduction of combustibles into an escape route;
- loss of normal storage facilities;
- fire safety equipment, such as automatic fire-detection systems becoming affected;
- fire-resisting partitions being breached or fire-doors being wedged open (see Appendix B1 for information on fire-resisting separation);
- additional personnel who may be unfamiliar with the premises.

Further guidance on fire safety during construction work is given by the HSE [Ref L, M] and the Fire Protection Association [Ref N].

1.10 Existing layout and construction

Traditionally, occupants have been advised to shut doors when escaping from a fire but in open-plan areas there are few doors to shut. In these areas the fire, and especially the smoke, may spread faster than expected.

You should evaluate the construction of your premises. This does not mean a structural survey, unless you suspect that the structure is damaged or any structural fire protection is missing or damaged, but rather an informed look around to see if there are any easy paths through which smoke and fire may spread and what you can do to stop that. In general, older

buildings will have more void areas, possibly hidden from view, which will allow smoke and fire to spread away from its source. Whatever your type of building, you may need to consider some of the following examples of things that may assist the spread of fire and smoke including:

- vertical shafts, such as lifts, open stairways, linen and waste chutes and dumb waiters;
- false ceilings, especially if they are not fire-stopped above walls;
- voids behind wall panelling;
- unsealed holes in walls and ceilings where pipe work, cables or other services have been installed;
- doors, particularly to stairways, which are ill-fitting or routinely left open;
- storage under stairs.

1.11 Particular hazards in corridors and stairways used as escape routes

Items that are a source of fuel, pose an ignition risk, or are combustible and likely to increase the fire loading, should not be located on any corridor or, stairway or circulation space that will be used as an escape route. Such items include:

- portable heaters, e.g. LPG or electric radiant heaters and electric convectors or boilers;
- gas cylinders for supplying heaters;
- cooking appliances;
- some gas pipes, meters, and other fittings;

However, depending on the findings of your risk assessment the items below may be acceptable if the minimum exit widths are maintained and the item presents a relatively low fire risk.

- non-combustible lockers;
- coat racks;
- vending machines;

- small items of electrical equipment (e.g. photocopiers);
- upholstered furniture;

1.12 Insulated core panels

Some buildings have insulated core panels as exterior cladding or for internal structures and partitions. Insulated core panels are used because they are easily constructed, which enables alterations and additional internal partitions to be erected with minimum disruption to business.

They normally consist of a central insulated core, sandwiched between an inner and outer metal skin. The central core can be made of various insulating materials, ranging from virtually non-combustible through to highly combustible. Fire can grow un-noticed in the core and only become apparent when it is well developed.

Figure 18 Insulated core panels - internal panel

It is difficult to identify the type of core the panels have, therefore best practise can help you 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.
- Check where openings have been made for doors, windows, cables and ducts that these have been effectively sealed and the inner core has not been exposed.
- Ensure there has been no mechanical damage, eg caused by mobile equipment.
- Ensure that loads, such as storage and equipment, are supported by such panels only if they have been designed and installed to perform this function.

The panels should be installed by a competent person in accordance with industry guidance [Ref Q].

The use of combustible panels in areas of buildings with a high life risk, eg where large numbers of people are present, should be carefully considered. Your fire risk assessment may need to be revised to ensure that any increased risk resulting from this type of construction is considered.

1.13 Restricting the spread of fire and smoke

To reduce the risk to people if there is a fire, you need to consider how to control or restrict the spread of fire and smoke. The majority of people who die in fires are overcome by the smoke and gases.

It is important to ensure that, in the event of fire, the rate of fire growth is restricted in its early stages. It should also be noted that most measures which restrict the rate of fire growth in its early stages will also serve to restrict the fire spread in its later stages.

Combustible contents

The use of flame-retardant materials will substantially reduce the fire risk. Your premises may contain a range of materials and could include:

- mattresses, bedding, furnishings, upholstered furniture and cushions;
- curtains, drapes and other textile hangings;
- resident/guest display material on walls;
- promotional and seasonal festival displays.

The use of furnishings, beds and bedding, and synthetic materials which are easily ignited or have rapid spread of flame characteristics should be avoided and you should seek to use such materials that have had some form of fire-retardant treatment. If combustible materials are present, they should be taken into account when determining the acceptability of escape routes.

Upholstered furniture should only contain those filling materials which comply with the Furniture and Furnishings (Fire) (Safety) Regulations 1988 [Ref R]; and that invisible parts of permanent covers comply with the provisions of the Furniture and Furnishings (Fire) (Safety) (Amendment) Regulations 1989 [Ref S].

Curtains or drapes should be of durably flame-retarded fabric or inherently flame retarded fabric and should conform to BS 5867: 2 fabric type B [Ref T].

Equivalent European classification standards may also be used.

If in doubt you should seek specialist advice with regards to the treatments and tests for these materials which can reduce their flammability and/or combustibility.

Textiles and furniture supplied by the owners and managers, or where materials are bought in by residents, you should seek to meet the following recommendations:

- Upholstered furniture (and composites of cover material and infill) and loose covers should comply with BS 5852 [Ref AI]

- Textile fabrics for curtains (including nets and linings) generally should comply with BS 5867-2 [Ref T].

- Curtains and drapes for bedrooms should satisfy the criteria of test methods BS EN 1101 [Ref AJ] and BS EN 1102 [Ref AK]

Where doubt exists about the suitability of a material you or the occupier should be advised to obtain a test certificate to show compliance with the appropriate standard. In some premises, eg HMO's and hostels, you should consider prohibiting residents bring in their own furniture, beds etc, if it does not meet the above requirements.

Similarly, you may wish to ensure that wall and ceiling linings, bedding, curtains, soft toys, drapes and other hanging textiles are fire retardant. Care is needed on the selection of decorative furnishes and multi-layer decorative systems, e.g. wall papers and paints.

Furnishings treated with flame-retardant treatments may have a limited "wash life" before the effectiveness of the flame-retardant is diminished. To maintain the protection, you should

follow the manufacturers/suppliers instructions. If in doubt you should seek confirmation, from the supplier, that the items have been tested for flammability by a UKAS* accredited organisation.

Display materials and decorations

Displays are often located in corridors and in entrance foyers, and generally comprise materials such as paper, cardboard and plastic which provide a means for the rapid spread of fire. You should evaluate what material could ignite first and what would cause the fire to develop and spread, and assess how materials used in temporary or permanent displays would interact with surface linings and position them accordingly. To reduce the risk of fire spread, you should consider the following:

- avoid the use of displays in corridors and foyers
- minimise the size and number of display areas to discrete, separated areas (e.g. along a corridor);
- treating displays with proprietary flame-retardant sprays
- the use of display boxes
- keep displays away from curtains, light fittings and heaters;
- keep displays away from ceiling voids which may lack fire barriers
- ensure that there are no ignition sources in the vicinity

Caravans and tents

Fire can spread rapidly between caravans and between tents, if they are too close. Safe separation distances between units should be applied, eg 6m spacing for park homes. Further guidance on caravan and tent fire precautions can be found in [Ref BB, BC and BD].

Fire-resisting structures

Many buildings are divided into different areas by fire-doors, walls and floors. These are partly designed to keep a fire within one area, giving people more time to escape. You will need to identify which doors, walls and floors in your building are fire resisting. There may be information available from when the building was built, if alterations have been made, or from

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* United Kingdom Accreditation Service. www.ukas.com

a previously held fire certificate. High risk areas (e.g. catering facilities) should be separated from the rest of the premises by 30 minute fire resisting construction.

Normally if there are fire-doors in a wall, then the wall itself will also need to be fire resisting. (See Appendix B1 for more technical information about fire-resisting wall and doors s.) If you decide that a wall or floor is fire resisting then you should not make any holes in it, eg for extra doors or pipe ducts, without consulting a competent person.

If your premises are of CLASP or SCOLA type construction, the installation of appropriately installed cavity barriers to fire resisting walls, floors and roof spaces will generally be required to restrict the spread of fire and smoke. If you are in any doubt as to whether any remedial work will be required, then ask for advice from a competent person.

Smoke control arrangements

In more complex buildings, such as modern hotels and flats, there may be some form of smoke control provided for the safety of the occupants and to assist fire-fighting (e.g. Smoke and Heat Exhaust Ventilation Systems (SHEVS)). These systems are designed to restrict the spread of fire and smoke usually by venting the heat and smoke through the roof or via other routes to outside. Low level inlet air is essential for the operation of SHEVS and all openings for this purpose should not be obstructed.

Special down-stands may have been installed to create a reservoir which will contain the smoke and hot gases at roof level, while vents allow the smoke to escape. It is important that any smoke can flow easily into the reservoirs and that nothing which could cause an obstruction, eg large advertising displays, is fixed near the vents.

If your building has smoke vents fitted, or any other form of smoke control, then you may need to seek advice from someone who is competent in such systems. Further information on smoke control can be found from CIBSE Guide E [Ref AB] or from the BRE [Ref AC].

Ventilation systems

Where ventilation systems might assist the spread of flames, smoke and hot gases from a fire it will be necessary to take steps to safe guard the means of escape against this hazard.

1.14 Arson

Recent studies indicate that over 3500 deliberately set fires, resulting in two deaths, occur every week. In premises for sleeping accommodation it is estimated that 12% of all fires are deliberately set.* All premises can be targeted either deliberately or just because they offer

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* Fire Statistics UK, 2001, ODPM: 2003.

easy access.

Be aware of other small, deliberately set fires in the locality, which can indicate an increased risk to your premises. Be suspicious of any small ‘accidental’ fires on the premises and investigate them fully and record your findings.

Fires started deliberately can be particularly dangerous because they generally develop much faster and may be intentionally started in escape routes. Of all the risk-reduction measures, the most benefit may come from efforts to reduce the threat from arson.

Measures to reduce arson may include the following:

- ensure the outside of the premises is well lit and, if practical, secure the perimeter of the premises;
- thoroughly secure all entry points to the premises, including windows and the roof, but make sure that any people working late or alone still have adequate escape routes;
- make sure you regularly remove all combustible rubbish;
- do not place rubbish skips adjacent to the building and secure waste bins in a compound separated from the building;
- do not place vehicles, caravans or other portable structures adjacent to the building;
- encourage staff to report people acting suspiciously;
- remove automatic entry rights from staff who have been dismissed;
- ensure that your security alarm/fire-detection system is monitored and acted on;
- secure flammable liquids so that intruders cannot use them;

secure all storage areas and unused areas of the building that do not form part of an escape route against unauthorised access, ensure access to keys to those areas is restricted;

- fit secure metal letterboxes on the inside of letter flaps to contain any burning materials that may be pushed through.

Further guidance on the reducing the risk of arson has been published by the Arson

Prevention Bureau.*

1.15 People especially at risk

Of all the people who may be especially at risk you will need to pay particular attention to people who have some form of disability. The Disability Rights Commission estimates that 11 million people in this country have some form of disability, which may mean that they find it more difficult to leave a building if there is a fire. Under the Disability Discrimination Act,[13] if disabled people could realistically expect to use the service, (or premises) you provide, then you must anticipate any reasonable adjustments that would make it easier for that right to be exercised.

The Disability Discrimination Act[13] includes the concept of 'reasonable adjustments' and this can be carried over into fire safety law. It can mean different things in different circumstances. For a small business it may be considered reasonable to provide contrasting colours on a handrail to help people with vision impairment to follow an escape route more easily. However, it might be unreasonable to expect that same business to install an expensive voice-alarm system. Appropriate 'reasonable adjustments' for a large business or organisation may be much more significant.

If disabled people are going to be in your premises then you must also provide a safe means for them to leave if there is a fire. You and your staff should be aware that disabled people may not react, or can react differently, to a fire warning or small fire.

In premises with a simple layout, a common-sense approach, such as offering to help lead a blind person or helping an elderly person down steps may be enough. In more complex premises, more elaborate plans and procedures will be needed, with trained staff assigned to specified duties.In complex premises with many disabled people, you may also wish to contact a professional consultant or take advice from disability organisations.

Whilst the majority of disabled people wish to and are able to facilitate their own escape, there may be a significant number of pupils or students with special needs who are only able to move or react adequately with assistance from staff.

Consider the needs of those with mental disabilities or spatial recognition problems. The range of disabilities encountered can be considerable, extending from mild epilepsy to complete disorientation in an emergency situation. Many of these can be addressed by properly trained staff, discreet and empathetic use of the 'buddy system' or by careful planning of colour and texture to identify escape routes.

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* Visit www.arsonpreventionbureau.org.uk for more information.

When disabled pupils, students and staff use the premises, their needs should be discussed with them. These will often be modest and may require only changes or modifications to existing procedures. You may need to develop individual 'personal emergency evacuation plans' (PEEPs) for disabled persons who frequently use a building. They will need to be confident of any plan/PEEP that is put in place after consultation with them. As part of you consultation exercise you will need to consider the matter of personal dignity.If members of the public use your building then you may need to develop a range of standard PEEPs which can be provided on request to a disabled person.

Guidance on removing barriers to the everyday needs of disabled people is in BS 8300.[14] Much of this advice will also help disabled people during an evacuation.

Further advice can be obtained from the Disability Rights Commission at www.drc-gb.org.

Section 2 Further guidance on fire-detection and warning systems

The primary purpose of the automatic fire detection and warning system is to alert occupants/residents to enable them to move away from the fire to a place of total safety while the escape routes are still clear of smoke.

Your electrical fire detection and warning system should typically include the following:

- fire detectors, eg smoke, heat;
- manual call points (break-glass call points) next to exits with at least one call point on each floor;
- electronic sirens or bells;
- a control and indicator panel.

If your building has areas where a fire could develop undetected or where people work alone and might not see a fire, then it may be necessary to check your system protects these areas.

If, for any reason, your system fails you must still ensure that people in your premises can be warned and escape safely. A temporary arrangement, such as whistles or air horns, combined with suitable training, may be acceptable for a short period, pending system repairs.

The fire warning sound levels should be loud enough to alert everyone, taking into account background noise. In areas with high background noise, or where people may be wearing hearing protectors, the audible warning should be supplemented, eg with visual alarms. In sleeping areas, to ensure that people are woken, a sufficient sound level should be achieved at the head of the bed (i.e. 75dBA) . This will usually mean the fitting a sounder device in each bedroom.

People with hearing difficulties

Where people have hearing difficulties, particularly those who are profoundly deaf, then simply hearing the fire warning is likely to be the major difficulty. If these persons are never alone while on the premises then this may not be a serious problem, as it would be reasonable for other occupants to let them know that the building should be evacuated. If a person with hearing difficulties is likely to be alone, then consider other means of raising the alarm. Among the most popular are visual beacons and vibrating devices or pagers that are linked to the existing fire alarm.

Voice alarms

Research has shown that some people and, in particular, members of the public do not always react quickly to a conventional fire alarm. Voice alarms are therefore becoming increasingly popular and can also incorporate a public address facility. The message or messages sent must be carefully considered. It is therefore essential to ensure that voice-alarm systems are designed and installed by a person with specialist knowledge of these systems.

Schematic plan

In order to quickly determine where a fire has been detected, you should consider displaying a schematic plan showing fire alarm zones in a multi-zoned system adjacent to the control panel.

2.1 Manual call points

Manual call points, often known as ‘break-glass’ call points, enable a person who discovers a fire to immediately raise the alarm and warn other people in the premises of the danger.

People leaving a building because of a fire will normally leave by the way they entered. Consequently, manual call points are normally positioned at exits and storey exits that people may reasonably be expected to use in case of fire, not just those designated as fire exits. However, it is not necessary in every case to provide call points at every exit.

Manual call points should normally be positioned so that, after all fixtures and fittings,

machinery and stock are in place, no one should have to travel more than 45 m to the nearest alarm point. This distance may need to be less if your premises cater for people of limited mobility or there are particularly hazardous areas. They should be conspicuous (red), fitted at a height of about 1.4 m (or less for premises with a significant number of wheelchair users), and not in an area likely to be obstructed.

Conventionally sited call points that operate an immediate general alarm are not always desirable in a some areas of complex buildings, eg function rooms in a hotel. To reduce the risk of malicious or accidental operation you should consider alternative arrangements such as:

- locating the majority of manual call points in staff areas
- the guarding of manual call points
- a delayed alarm for investigation purposes before any general alarm is given

For these arrangements to be effective your management plan should have robust management procedures in place.

2.2 Automatic fire detection

Your sleeping premises should have automatic fire detection, which actuates the fire alarm. Automatic fire detection provided the means to know that you have a fire at the earliest possible time. It offers you the possiblity of carrying out fire fighting (because the fire is still small) and the maximum period of time to implement your emergency plan and to evacuate residents, staff or any other relevant persons. The system can be linked to other active fire safety systems in your building (eg door closing devices and smoke control vents) so that they operate automatically. Automatic fire detection may be needed in the following circumstances:

- for alerting people who are sleeping;
- if you have areas where people are isolated or remote and could become trapped by a fire because they are unaware of its development, such as lone workers;
- if you have areas where a fire can develop unobserved (e.g. storerooms);
- as a compensating feature, eg for inadequate structural fire protection, in dead-ends or where there are extended travel distances;
- where smoke control and ventilation systems are controlled by the automatic fire-detection system;

- areas of high risk, eg boiler rooms, kitchens;
- other areas such as, high risk unoccupied areas, storage areas and walk in cupboards, large rooms, access rooms to sleeping accommodation, areas or buildings served by a single stairway.

The precise design and scope of the system required will be subject to the findings of your risk assessment, advice from system designers and guidance from appropriate standards. Table 2 below suggests acceptable categories of system for typical types of premises. It must be emphasised that this table can only provide the starting point for assessing the level of fire detection and warning system necessary.

Table 2 Suggested standard of automatic fire detection.

Type of premises	Category of system Note 5
Hotels, motels, hostels large bed & breakfast and boarding house type accommodation. Note 1	L2
School and student residencies Family group homes, (esp. refuges for vulnerable groups).	L2 or L3
Sheltered accommodation	L2 in common areas Note 2.
Houses in Multiple Occupation (with floor more than 4.5m above ground level) Flats and conversions (including holiday flats) that have not been constructed to current building regulation	L2 in common areas Note 3.
Houses in Multiple Occupation (with no floor more than 4.5m above ground level) Small premises, eg bed & breakfast	LD2 or 3
Flats and maisonettes (common areas)	Note 4

Key	
L2 =	automatic fire detection systems for escape routes (usually including rooms that open on to escape routes) and areas of high fire hazard or risk high risk to occupants, detailed in BS 5839-1
L3 =	automatic fire detection systems for escape routes (usually including rooms that open on to escape routes), detailed in BS 5839-1

LD2 =	for a dwelling, an automatic fire detection systems for escape routes (usually including rooms that open on to escape routes) and areas of high fire hazard or risk high risk to occupants, detailed in BS 5839-6
LD3 =	for a dwelling, an automatic fire detection systems for escape routes (usually including rooms that open on to escape routes), detailed in BS 5839-6
small premises =	A two storey premises (ground and first storey) with a single stair, where the travel distance from the furthest point to a place of reasonable safety is limited to 18m.

Note 1 In the case of single self contained chalet type accommodation a system based on self contained smoke alarms may be appropriate.

Note 2 An individual private dwelling in sheltered accommodation should have a LD3 system.

Note 3 An individual private dwelling should have a LD2 or LD3 system.

Note 4. Flats and maisonettes, constructed to current Building Regulations, will not require automatic fire detection in common areas. However, self-contained smoke alarms will normally be fitted within each accommodation unit.

Note 5 The outcomes of your risk assessment will determine the necessary standard of AFD required, eg in some cases, a BS5839-1 Category L1 system may be required.

The reliability of automatic fire detection can be enhanced, especially if there are periods when nobody is awake, by having the system monitored by a commercial monitoring company.

2.3 Reducing false alarms

False alarms from automatic fire detection systems are a major problem and result in many unwanted calls to the Fire and Rescue Service every year. Guidance on reducing false alarms has been published by ODPM/CFOA/BFPSA.[15]

If there are excessive false alarms in your premises, people may become complacent and not respond correctly to a warning of a real fire. In such circumstances, you may be failing to comply with fire safety law. All false alarms should be investigated to identify the cause of the problem and remedial action taken.

To help reduce the number of false alarms, the system design and location of detection and activation devices should be reviewed against the way the premises are currently used. For example, if a store room has been converted to staff area with cooking facilities (eg a microwave and toaster) then the likelihood of the detector being set off is increased. Similarly, if a manual call point is placed in a storage area where there is continual movement of stock, the call point is likely to be accidentally damaged. In this case a simple, fabricated hinged metal guard around the call point is likely to solve the problem.

Occasionally people set off a manual call point in the genuine, but incorrect belief that there is

a fire. Nothing should be done to discourage such actions and the number of false alarms generated this way is not significant.

Further detailed guidance on reducing false alarms is available in BS 5839-1.[16]

2.4 Staged fire alarms

In the majority of premises the actuation of the fire warning system should trigger the immediate and total evacuation of the building. However, in some large or complex buildings the evacuation can be managed with the aid of a staged fire alarm. You should seek expert advice to develop staged evacuation.

With a staged fire alarm the initial alert signal is given to occupants, or more commonly, only to certain staff, who then carry out pre-arranged actions to help others to evacuate more easily. It requires able, fully-trained staff to be available at all times and should not be seen as a simple means of reducing disruption to working practices. Where a staged evacuation strategy is in place, disabled people should be alerted on the first stage to give them the maximum time to reach a reasonable place of safety.

These arrangements both require fire-warning systems capable of giving staged alarms, including an 'alert signal' and a different 'evacuate signal' and should only be considered after consultation with specialist installers and, if necessary, the relevant enforcing authority.

Such systems also require a greater degree of management input to ensure that staff and others are familiar with the system and action required.

2.5 Testing and maintenance

Your fire-warning and/or detection system should be supervised by a named responsible person, given enough authority and training to manage all aspects of the routine testing and scrutiny of the system.

The control and indicating equipment should be checked at least every 24 hours to ensure there are no specific faults. All types of fire-warning systems should be tested once a week. For electrical systems a manual call point should be activated (using a different call point for each successive test), usually by inserting a dedicated test key. This will check that the control equipment is capable of receiving a signal and in turn, activating the warning alarms. Manual call points may be numbered to ensure they are sequentially tested.

Testing and maintenance of the system should be carried out by a competent person.

Figure 21 Using a test key

It is good practice to test the alarm at the same time each week, but additional tests may be required to ensure that staff or people present outside normal working hours are given the opportunity to hear the alarm.

Where systems are connected to a central monitoring station, arrangements should be made prior to testing to avoid unwanted false alarms.

Six-monthly servicing and preventive maintenance should be carried out by a competent person with specialist knowledge of fire-warning and automatic detection systems. This task is normally fulfilled by entering into a service contract with a specialist fire alarm company.

It is good practice to record all tests, false alarms and any maintenance carried out.

2.6 Guaranteed power supply

Premises providing sleeping accommodation will normally require an electrical fire-warning system, the Health and Safety (Safety Signs and Signals) Regulations 1996[5] requires it to have a back-up power supply.

Whatever back-up system is used, it should normally be capable of operating the fire-warning and detection system for a minimum period of 24 hours and sounding the alarm signal in all areas for 30 minutes. Testing of the system should be carried out by a competent person.

2.7 New and altered systems

New systems and those undergoing substantial alterations should normally comply with the

recommendations of the appropriate part of BS 5839.[16] If you are unsure that your existing system is adequate you will need to consult a competent person.

Section 3 Further guidance on fire-fighting equipment and facilities

You have responsibility for the provision of appropriate fire-fighting equipment. It is also your responsibility to check that all fire-fighting equipment is in the correct position and in satisfactory order before the premises are used by the public.

Appropriate staff should be trained in the use of all such equipment.

3.1 Portable fire-fighting equipment

Fire extinguishers provided should be appropriate to the specific risks found in your premises in accordance with Table 3.

Fires are classed according to what is burning – different classes are given in Table 3

Table 3 Class of fire

Class of fire	Description
Class A	Fires involving solid materials such as wood, paper or textiles
Class B	Fires involving flammable liquids such as petrol, diesel or oils
Class C	Fires involving gases
Class D	Fires involving metals
Class F	Fires involving cooking oils such as in deep-fat fryers

Note: If there is a possibility of a fire in your premises involving material in the shaded boxes then you should seek advice from a competent person.

Any staff designated as fire wardens or as part of a fire-fighting team should be properly trained in the use of extinguishers.

Number and type of extinguishers

Typically for the Class A fire risk, the provision of one water-based extinguisher for

approximately every 200 m^2 of floor space, with a minimum of two extinguishers per floor, will normally be adequate.

Where it is determined that there are additionally other Classes of fire risk, the appropriate type, number and size of extinguisher should be provided. Further information is available in BS 5306-8[18].

Where the fire risk is not confined to a particular location, eg. Class A fires, the fire extinguishers should be positioned on escape routes, close to the exit from the room or floor, or the final exit from the building. Similarly, where the particular fire risk is specifically located, eg flammable liquids, the appropriate fire extinguisher should be near to the hazard, so located that they can be safely used. They should be placed on a dedicated stand or hung on a wall at a convenient height so that employees can easily lift them off (at about 1 m for larger extinguishers, 1.5 m for smaller ones, to the level of the handle). Ideally no one should have to travel more than 30 m to reach a fire extinguisher

Where there are self-contained small premises within the larger premises, multi-purpose extinguishers which can cover a range of risks may be appropriate. Depending on the outcome of your fire risk assessment, it may be possible to reduce this to one extinguisher in very small premises with a floor space of less than 90 m2.

Consider the implications of the Manual Handling Operations Regulations 1992[17] when selecting and siting fire-fighting equipment.

Extinguishers manufactured to current standards should be predominately red and typically may have a colour-coded area, sited above or within the instructions, denoting the type of extinguisher. Older extinguishers will have been manufactured with the body of the extinguisher painted entirely in a single colour. These older extinguishers remain acceptable until they are no longer serviceable. However, it is good practice to ensure that old and new style extinguishers are not mixed on the same floor of a building.

The colour referred to is the colour of the extinguisher or the colour-coded area.

Water extinguishers (Red)

This type of extinguisher can only be used on Class A fires. They allow the user to direct water onto a fire from a considerable distance. A 9 litre water extinguisher can be quite heavy and some water extinguishers with additives can achieve the same rating, although they are smaller and therefore considerably lighter. This type of extinguisher is not suitable for use on live electrical equipment.

Water extinguishers with additives (Red)

This type of extinguisher is suitable for Class A fires. They can also be suitable for use on Class B fires and where appropriate, this will be indicated on the extinguisher. They are generally more efficient than conventional water extinguishers.

Foam extinguishers (Cream)

This type of extinguisher can be used on Class A or B fires and is particularly suited to extinguishing liquid fires such as petrol and diesel. They should not be used on free-flowing liquid fires unless the operator has been specially trained, as these have the potential to rapidly spread the fire to adjacent material. This type of extinguisher is not suitable for deep-fat fryers or chip pans.

Powder extinguishers (Blue)

This type of extinguisher can be used on most classes of fire and achieve a good 'knock down' of the fire. They can be used on fires involving electrical equipment but will almost certainly render that equipment useless. Because they do not cool the fire appreciably it can re-ignite. Powder extinguishers can create a loss of visibility and may affect people who have breathing problems.

Carbon dioxide extinguishers (Black)

This type of extinguisher is particularly suitable for fires involving electrical equipment as they will extinguish a fire without causing any further damage. As with all fires involving electrical equipment, the power should be disconnected if possible.

Class 'F' extinguishers

This type of extinguisher is particularly suitable for commercial catering establishments with deep-fat fryers.

Maintenance of portable fire extinguishers

All portable fire extinguishers will require periodic inspection, maintenance and testing. Depending on local conditions such as the likelihood of vandalism or the environment where extinguishers are located, carry out brief checks to ensure that they remain serviceable. In normal conditions a monthly check should be enough. Maintenance by a competent person should be carried out annually.

The selection and installation of fire extinguishers should comply with BS 5306-8[18] and for maintenance, BS 5306-3.[19] The colour coding of fire extinguishers should comply with BS 7863.[20]

Fire blankets

Fire blankets should be located in the vicinity of the fire hazard they are to be used on., but in a position that can be safely accessed in the event of a fire,. They are classified as either light-duty or heavy–duty. Light-duty fire blankets are suitable for dealing with small fires in containers of cooking oils or fats and fires involving clothing. Heavy-duty fire blankets are for industrial use where there is a need for the blankets to resist penetration by molten materials.

3.2 Fixed fire-fighting installations

These are fire-fighting systems which are normally installed within the structure of the building. They may already be provided in your premises or you may be considering them as a means of protecting some particularly dangerous or risk-critical area as part of your risk-reduction strategy.

Hose reels

Permanent hose reels installed in accordance with the relevant British Standard (BS EN 671-3: 2000[21]) provide an effective fire-fighting facility. They may offer an alternative, or be in addition to, portable fire-fighting equipment. A concern is that untrained people will stay and fight a fire when escape is the safest option. Where hose reels are installed, and your fire risk assessment expects relevant staff to use them in the initial stages of a fire, they should receive appropriate training.

Maintenance of hose reels

Visual checks for leaks and obvious damage should be carried out regularly and more formal maintenance checks should be carried out at least annually by a competent person.

Figure 22 Hose reel

Sprinkler systems

Sprinkler systems can be very effective in controlling fires. They can be designed to protect life and/or property and may be regarded as a cost-effective solution for reducing the risks created by fire. Where installed, a sprinkler system is usually part of a package of fire precautions in a building.

Sprinkler protection could give additional benefits, such as a reduction, in the amount of portable fire-fighting equipment necessary, and the relaxation of restrictions in the design of buildings. Where installed, a sprinkler system is usually part of a package of fire precautions in a building.

The design and installation of new sprinkler systems and the maintenance of all systems should comply with BS EN 12845[22] or the Loss Prevention Council (LPC) Rules [Ref BF] or BS 5306-2 [Ref W] , or BS 9251 [Ref BE] and should only be carried out by competent people. Routine maintenance by on-site personnel may include checking of pressure gauges, alarm systems, water supplies, any anti-freezing devices and automatic booster pump(s).

A competent maintenance contractor should provide guidance on what records need to be completed.

If a sprinkler system forms an integral part of your fire strategy it is imperative that adequate management procedures are in place to cater for those periods when the sprinkler system is not functional. This should form part of your emergency plan. Although the actual procedures will vary, such measures may include the following:

- Restore the system to full working order as soon as possible.
- Limit any planned shutdown to low-risk periods when numbers of people are at a minimum or when the building is not in use. This is particularly important when sprinklers are installed to a life safety standard or form part of the fire safety engineering requirements.
- You may need to isolate the area without the benefit of working sprinklers from the rest of the premises by fire-resisting material.
- Avoid higher-risk processes such as ‘hot-work’.
- Extra staff should be trained and dedicated to conducting fire patrols.
- Any phased or staged evacuation strategy may need to be suspended. Evacuation should be immediate and complete. (Exercise caution as the stairway widths may have been designed for phased evacuation only).
- Maintenance should be carried out on a zoned basis, to prevent leaving the whole

system ineffective.

- Inform the local fire and rescue service.

If, having considered all possible measures, the risk is still unacceptable then it will be necessary to close all or part of the building.

Other fixed installations

There are a number of other fixed installations including water mist, gaseous, deluge and fixed powder systems. If your premises have a fixed fire-fighting system that you are unfamiliar with, then seek advice. Where a fixed fire-fighting system forms an integral part of your fire safety strategy, it should be maintained in accordance with the relevant British Standard by a competent person.

3.3 Other facilities (including those for fire-fighters)

Building Regulations and other Acts, including local Acts, may have required facilities to be provided for the safety of people in the building and to help fire-fighters. Fire safety law places a duty on you to maintain such facilities in good working order and at all times.

These may include:

- access for fire engines and fire-fighters;
- fire-fighting shafts;
- sprinkler systems;
- smoke-control systems;
- dry or wet rising mains and fire-fighting inlets and outlets;
- information and communication arrangements;
- fire-fighters' switches.

The Workplace (Health, Safety and Welfare) Regulations 1999[23] also require that systems provided for safety within a workplace are maintained.

Access for fire engines and fire-fighters

Buildings that have been constructed to modern Building Regulations or in accordance with certain local Acts will have been provided with facilities that allow fire engines to approach and park within a reasonable distance so that fire-fighters can use their equipment without too

much difficulty.

These facilities may include, hard standing areas for fire engines and access into the building for fire-fighters. Hardstanding areas for fire engines should not be used as car parking. It is essential that where such facilities are provided they are properly maintained and available for use at all relevant times.

Where a building is used by a number of different occupants you will need to ensure co-operation between the various 'responsible people' to maintain fire and rescue service access. In exceptional cases, where access is persistently obstructed, you may need to make additional arrangements.

See Approved Document B to the Building Regulations for more information.[24]

Fire-fighting shafts and lifts

Fire-fighting shafts are provided in larger buildings to help fire-fighters reach floors further away from the building's access point. They enable fire-fighting operations start quickly and in comparative safety by providing a safe route from the point of entry to the floor where the fire has occurred.

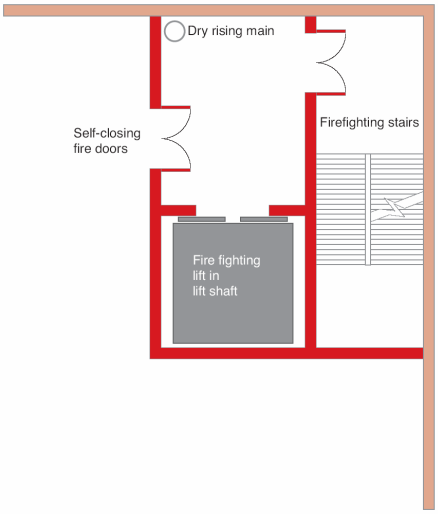


Figure 23 Fire-fighting shaft

Entry points from a stairway in a fire-fighting shaft to a floor will be via a lobby, through two sets of fire- and smoke-resisting doors and walls. Many people will use the stairway for normal movement through the building and it is important that the safety features are not compromised by doors being wedged open.

Most fire-fighting shafts will also incorporate a fire-fighting lift which opens into the lobby. The lift will have a back-up electrical supply and car control overrides. The primary function of the lift is to transport fire-fighting personnel and their equipment to the scene of a fire with the minimum amount of time and effort. It may also be used to help evacuate less mobile people.

Alterations that might affect the shaft should not be made without first liaising with other responsible persons, any owners or managing agents and the enforcing authority. Any proposed changes will require Building Regulation approval from a Building Control Body.

Where a fire-fighting shaft is provided, it should be maintained in accordance with BS 5588-5 [Ref X], or more recent standard where relevant by a competent person.

Smoke control systems

These are complex systems that are provided for life safety of occupants, assistance to fire-fighters and property protection by clearing hot smoke and gases from the building. If you have one of these systems provided in your premises you should ensure you understand how it operates and that it is maintained in full working order. If your system is part of a larger system then you should liaise with other occupiers and building managers.

The smoke control system should be maintained by a competent person who is familiar with the fire engineering performance specifications of that specific system.

Where these systems are installed in addition to a sprinkler system then the design and installation of each system should not act detrimentally on one another. A competent person should be employed to confirm this.

Dry and wet fire mains

The rising fire main is an important facility for the fire and rescue service in taller buildings. It consists of an inlet box where fire-fighters can connect their hoses, a pipe running up or through the building, outlet valves on each floor level and an air vent at the top.

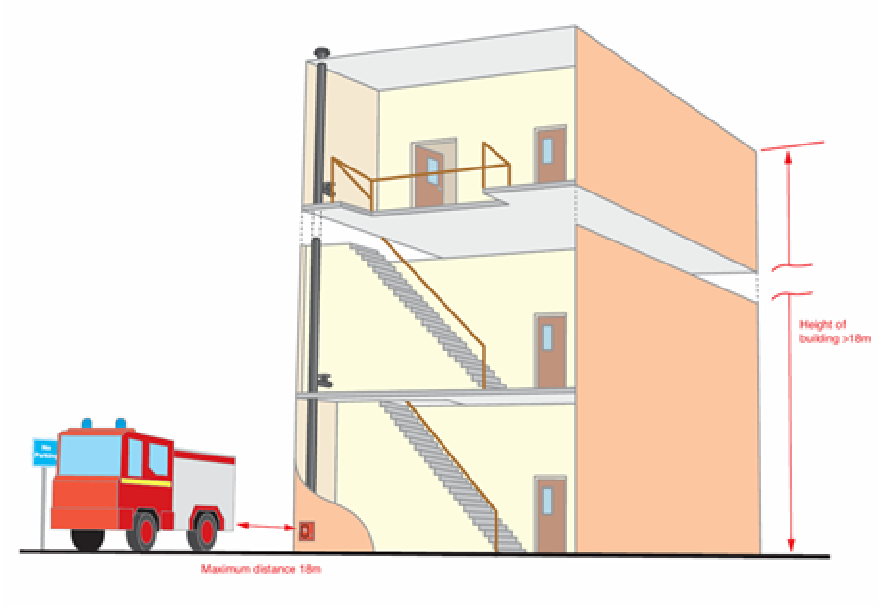


Figure 24 Rising main

It is important that fire mains remain in good working order. Issues to be considered can include the following:

- The physical approach to the inlet box should be such that a fire engine can park within 18 m with the inlet box in view.
- Prohibit car parking in front of the inlet box.
- Secure the inlet box in such a way that fire-fighters can open the door without too much difficulty.
- It is advisable to lock the landing valves in the closed position, usually with a leather strap and padlock.
- Provide wet rising mains with a facility to allow the fire and rescue service to supplement the water supply.

Foam inlets

These special inlets are usually fitted to provide an efficient way of extinguishing a fire in a basement or other area of high risk such as plant room. In many respects they look the same, as rising main inlet boxes but the door should be clearly marked ‘foam inlet’. The risk area should be kept clear of obstructions to allow the foam to spread into the compartment.

Maintenance of riser mains and foam inlets

All types of mains and associated valves should be maintained and tested on a regular basis by a competent person. Although there are no recommended periods between maintenance checks it would be prudent to carry out an annual service.

Fire-fighters' switches

Luminous discharge lighting, eg neon signs, is frequently used in many of the premises for which this guide is intended. Safety switches are normally provided to isolate high-voltage luminous signs or to cut off electrical power. In the case of existing installations, if they have been provided in accordance with previous legislation (eg the Local Government (Miscellaneous Provisions) Act 1982[25]), then it is likely that they will comply with the Order. If this is not the case, then you may need to consult the enforcing authority regarding the suitability of its location and marking. Testing should be carried out in accordance with the manufacturer's instructions. If you have no such instructions then an initial test should be carried out by a competent electrician.

Other facilities

As well as those already mentioned, other facilities may have been installed in your premises. Your fire risk assessment, emergency plan and maintenance audit (see Appendix A for an example checklist) should include these. Such facilities can include:

- information signs for fire-fighters;
- communication systems;
- static water supplies, private hydrants, meter bypass valves and underground tanks;
- standby fire pumps, electrical generators, air pumps and hydraulic motors;
- manual/self closing devices for roller shutter doors in fire compartment walls;
- water, deluge and mist systems

.

Section 4 Further guidance on escape routes

4.1 General principles

You now need to determine whether the escape routes in your premises are adequate, and this will depend on the remaining (residual) level of risk derived from your risk assessment so far.

This section is based on typical solutions for buildings of normal risk. If your premises (or part of your premises) are of a higher (or lower) risk you should adapt these solutions accordingly.

You are not obliged to adopt any particular solution in this guide if you prefer to meet the relevant requirement in some other way. If you decide to adopt some alternative arrangement it will need to achieve at least an equivalent level of fire safety.

Refer to the glossary for the definitions of any terms you may not be familiar with.

Levels of risk

You should attempt to make a judgement of your current (residual) level of risk and determine what amendments (if any) are required to reduce or remove the risk of injury and death by fire. Once you have put in place fire safety measures that are commensurate with the hazards you have identified there is almost certainly going to be a residual level of risk in your premises.

The purpose of your means of escape is to allow all occupants to get to a place of total safety as quickly and effectively as possible. When trying to determine the adequacy of your means of escape you should address the following questions in respect of all the parts or areas of your premises, all of which affect the time that people have to escape safely;

- What is the likelihood of a fire starting?
- If a fire should start is it likely to grow fast, and spread?
- If a fire should start will occupants know about it (and react to it) quickly?
- If a fire starts and spreads is it likely to cut off the nearest escape route or fire exit and trap any employees or others present so that they cannot make their escape from that area or the premises to a place of safety?

Your answers to these questions should help you assess your residual fire risk ("higher", "normal" or "lower") by determining whether your fire safety provisions are appropriate to the use and occupancy of the building, and enable you to;

- evaluate the number and location of your fire exits and escape routes

- evaluate the protection to your fire exits and escape routes
- ensure that they are sufficient for all the people likely to be present there at any time, and
- ensure that in the event of a fire the escape routes and exits remain viable and usable.

If your building has good fire safety management systems and has been built or refurbished throughout conforming to Building Regulations, for its specified use, then the risk rating in respect of the structure will probably be normal to lower risk. Some features you have identified as “higher” risk in your risk assessment may be of an importance (in your premises) such that they dominate the level of risk. If there are such aspects, then you should take measures to reduce that specific risk. For example, issues of poor management control should be improved regardless of other measures. In other cases, features which indicate that your premises is “higher” risk, might (in your premises) be compensated for by measures designed to “lower” risk (for example, a substantial fire load might be off-set by the presence of a sprinkler system).

The travel distance for “higher risk premises” should be applied where you have taken all possible measures to otherwise reduce the risk in your premises, but still have residual “higher risk” issues for which a reduced travel distance could compensate. The travel distance for “lower risk premises” should only be applied in exceptional cases in the very lowest risk premises e.g. where the occupancy is low, occupants are familiar with the premises, have excellent visual awareness, and combustibles are minimal. You will need to take additional measures (such as a change of layout or room use, extra fire detection, or fitting a suppression system) if you find that your means of escape are inadequate.

Suitability of escape routes

You should ensure that your escape routes are:

- suitable;
- easily, safely and immediately usable at all times;
- adequate for the number of people likely to use them;
- usable without passing through doors requiring a key or code to unlock;
- free from any obstructions, slip or trip hazards;
- well lit by normal or escape lighting;

- available for access by the emergency services.

In multi-occupied premises, escape routes should normally be independent of other occupiers, ie people should not have to go through another occupier's premises as the route may be secured or obstructed. Where this is not possible, then robust legal agreements should be in place to ensure their availability at all times.

All doors on escape routes should open in the direction of escape, ideally with a safety vision panel. This is particularly important if more than 60 people use them or they provide an exit from an area of high fire risk.

Number and type of people using the premises

As your escape routes need to be adequate for the people likely to use them you will need to consider how many people, including guests, residents, employees and the public, may be present at any one time. Where premises have been subject to Building Regulations approval for its use the number and width of escape routes and exits will normally be enough for the anticipated number of people using the building. In such buildings where the risk has changed or buildings were constructed before national Building Regulations it is necessary to confirm the provision.

If you propose to make changes to the use or layout of the building which may increase the number of people, you should check the design capacity by referring to guidance given in the Building Regulations Approved Document B.[24] and consult the Building Control body.

You should also consider the type of people who will use your premises. In a hotel or boarding house, this will consist of a mixture of employees, guests and short term residents. The guests are unlikely to be familiar with the premises or have any detailed knowledge of the alternative escape routes.

If the premises are being used as hostel type accommodation, or as a house in multiple occupation then the residents may be more familiar with the layout of the escape routes, even so they still remain vulnerable and at a higher risk when sleeping.

Your assessment must anticipate any particular difficulties that people may encounter when escaping. For example, if your premises are used by large numbers of children, parents with pushchairs, elderly people or people with some form of disability, then you need to take this into consideration when assessing whether your escape routes are safe.

Widths, capacity and number of escape routes and stairways

Once you have established the maximum number of people likely to be in any part of the premises, the next step is to establish that the capacity of the escape routes is adequate for

people to escape safely in sufficient time to ensure their safety in case of fire.

At least two exits should be provided if a room/area is to be occupied by more than 60 persons. This criterion of 60 can be varied in proportion to the risk, for a lower risk there can be a slight increase, for a higher risk, lower numbers of persons should be allowed.

Parts of hotels may be used as dance halls, discotheques or conference centres. In such circumstances, it may be more appropriate to apply the fire precautionary standards set out in the guides to fire safety in places of assembly (Table 1)

A function room could be used during the day for a seminar with a closely seated audience, in the evening a disco with tables and chairs and an antiques fair at the weekend. The assessment for the number and distribution of fire exits should consider the reasonable worst case for the number or type of people expected to use the facility.

The capacity of a route is determined by a number of factors including the width of the route, the time available for escape and the ability of the persons using them.

The effective usable width of an escape route is the narrowest point, normally a door or other restriction such as narrowing of a corridor due to fixtures and fittings. The capacity of an escape route is measured by the number of persons per minute that can pass through it so, to establish the capacity of the route, it is first necessary to measure the width of the route at the narrowest point. The effective width of a doorway is the clear unobstructed width through the doorway when the door is open at right angles to the frame. The effective width at any other point is the narrowest clear unobstructed width through which people can pass.

The time available for escape depends on several factors. Studies of human behaviour in an emergency situation have shown that about two thirds of the time available to escape is taken up by the initial reaction to the developing situation. For example, people will decide whether the situation is real or false, often waiting to see the reaction of people around them, and generally gathering information to decide whether to act or not. The final third is taken up by the actual movement away from the area of the fire. Throughout this time the fire may be growing and spreading. Research has shown that an ideal time to move each person to a place of reasonable safety in a normal risk building is approximately 50 seconds, and recommended travel distances (Table 4) are based on this time.

The minimum width of an escape route should not be less than 750mm (unless it is for use by less than 5 people in part of your premises) and, where wheelchair users are likely to use it, 900mm.

The aggregate width of all the escape routes should be not less than that required to accommodate the maximum numbers of people likely to use them.

When calculating the overall available escape route capacity for premises that have more than one way out, you should normally assume that the widest is not available because it has been compromised by fire. If doors or other exits leading to escape routes are too close to one another you should consider whether the fire could affect both at the same time. If that is the case, it may be necessary to discount them both from your calculation.

As a general rule stairways should be at least 1050 mm wide and in any case not less than the width of the escape routes that lead to them. In all cases the aggregate capacity of the stairways should be sufficient for the number of people likely to have to use them in case of fire. As with escape routes in general it will be necessary to consider the possibility of one stairway being inaccessible because of fire and the aggregate width should allow for this reduction.

Stairways wider than 2100mm should normally be divided into sections, each separated from the adjacent section by a handrail, so that each section measured between the handrails is not less than 1050mm wide.

Mobility impairment

Effective management arrangements need to be put in place for those that need help to escape.

Consider the following points:

- A refuge is a place of reasonable safety in which disabled people can wait either for an evacuation lift or for assistance up or down stairs (see Figure XXX). Disabled people should not be left alone in a refuge area whilst waiting for assistance with evacuation from the building. Depending on the design and fire resistance of other elements, a refuge could be a lobby, corridor, part of a public area or stairway, or an open space such as a balcony or similar place which is sufficiently protected (or remote) from any fire risk and provided with its own means of escape.

- Where refuges are provided, they should be enclosed in a fire-resisting structure which creates a protected escape route which leads directly to a place of total safety and should only be used in conjunction with effective management rescue arrangements. Your fire safety strategy should not rely on the fire and rescue service rescuing people waiting in these refuges.

- If fire-fighting lifts (provided in high buildings as fire-fighting access) are to be used for evacuation, this should be co-ordinated with the fire and rescue service as part of the pre-planned evacuation procedures.

- Normal lifts may be considered suitable for fire evacuation purposes, subject to an

adequate fire risk assessment and development of a suitable fire safety strategy by a competent person (see later).

- Since evacuation lifts can fail, having reached a refuge by an evacuation lift a disabled person should also be able to gain access to a stairway (should conditions in the refuge become untenable). An evacuation lift with its associated refuge should therefore be located adjacent to a protected stairway.

- Enough escape routes should always be available for use by disabled people. This does not mean that every exit will need to be adapted. Staff should be aware of routes suitable for disabled people so that they can direct and help people accordingly.

- Stairways used for the emergency evacuation of disabled people should comply with the requirements for internal stairs in the Building Regulations. Specialist evacuation chairs or other equipment may be necessary to negotiate stairs.

- Plans should allow for the careful carrying of disabled people down stairs without their wheelchairs, should the wheelchair be too large or heavy. You will need to take into account Health and Safety manual handling procedures in addition to the dignity and confidence of the disabled person.

- Stairlifts should not be used for emergency evacuation. Where installed in a stairway used for emergency evacuation, no parts of the lift, such as its carriage rail, should be allowed to reduce the effective width of the stairway or any other part of an emergency evacuation route.

- Where ramps are necessary for the emergency evacuation of people in wheelchairs they should be as gentle as possible. Ramps should be constructed in accordance with Approved Document M [Ref Y] .

- Some educational premises will have a high proportion of pupils/students who will be highly dependent on others to ensure their safe escape. You will need to consider special arrangements for these types of premises (e.g. appropriate staffing levels, layout of the premises).

Further information is available in Building Bulletin 91, Access for Disabled People to School Buildings

Further guidance is available in BS5588-8 [Ref Z] and BS5588-12. [Ref E]

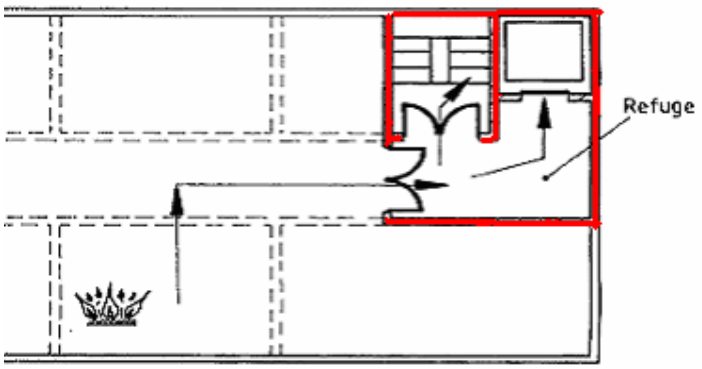


Figure XXX An example of a refuge

Childcare facilities/Creches

The location of childcare facilities/creches in your premises is important since parents or guardians will often seek to return to the facility when the alarm sounds. It is therefore important that the facility is located so to avoid parents from travelling against the normal direction of escape. The childcare facility should be sited at the same level as the parents or guardians or on the route to the final exit

Fire-resisting construction

The type and age of construction are crucial factors to consider when assessing the adequacy of the existing escape routes. To ensure the safety of people it may be necessary to protect escape routes from the effects of a fire. In older premises (see Appendix C for more information on historical properties) it is possible that the type of construction and materials used may not perform to current fire standards. Also changes of ownership and refurbishment may have led to:

- cavities and voids being created, allowing the potential for a fire to spread unseen;
- doors and hardware worn by age and movement being less likely to limit the spread of smoke;
- damaged or lack of cavity barriers in modular construction; and
- breaches in fire compartment walls, floors and ceilings created by the installation of new services, eg computer cabling.

Reasonable standards of structural fire resistance for normal risk buildings used for sleeping accommodation can be found in Approved Document B. Essentially, all upper floors in sleeping premises should be of 30 minutes fire resistance. However the floor between basement and ground floor should be of 60 minutes except for simple premises, eg small bed

and breakfast where it may be 30 minutes.

All corridors serving sleeping areas should be protected routes with 30 minutes fire resistance.

Where it is concluded an escape route needs to be separated from the rest of the premises by fire-resisting construction, eg a dead-end corridor or protected stairway (refer to Figures 28 and 29), then you should ensure the following:

- Doors (including access hatches to cupboards, ducts and vertical shafts linking floors) walls, floors and ceilings protecting escape routes should be capable of resisting the passage of smoke and fire for long enough so that people can escape from the building.

- Where suspended or false ceilings are provided, the fire resistance should extend up to the floor slab level above. For means of escape purposes a 30 minutes fire-resisting rating is normally enough.

If there is any doubt about the nature of the construction of your premises, ask for advice from a competent person.

Travel distance

Having established the number and location of people and the exit capacity required to evacuate them safely, you now need to confirm that the number and location of existing exits is adequate. In new buildings which have been designed and constructed in accordance with modern building standards the travel distances will already have been calculated. Once you have completed your fire risk assessment you need to confirm that those distances are still relevant.

Table 4 gives guidance on travel distances. It should be understood, however, that these distances are flexible and may be increased or decreased depending upon the level of risk after you have put in place the appropriate fire-prevention measures (Part 1 Step 3.3).

When assessing travel distances you need to consider the distance to be travelled by people when escaping allowing for walking around equipment, plant storage units etc. The distance should be measured from all parts of the premises to the nearest place of reasonable safety which is:

- a protected stairway enclosure (storey exit);
- a separate fire compartment from which there is a final exit to a place of total safety; or
- the nearest available final exit.

The suggested travel distances may be increased by the addition of further fire protection measures, eg automatic fire detection or sprinklers.

Table 4 Suggested travel distances

Escape routes	Suggested range of travel distance [Note3, Note4]
Where more than one route is provided	18m in a bedroom[Note1] and higher fire-risk area [Note2] 35m in normal fire-risk area 45m in lower fire-risk area
Where only a single escape route is provided	9 m in a bedroom [Note1] and higher fire-risk area[Note2] 18 m in normal fire-risk area 25m in a lower fire-risk area

Note 1: bedroom includes all sleeping rooms eg dormitories. The travel distance within a bedroom should be restricted, however, this distance can be included as part of the overall travel distance to a protected stair or final exit. For example, if the travel distance within a

bedroom (a single escape route) is 9m and the corridor has two escape routes in a normal fire-risk area, the travel distance from the bedroom to the nearest protected stair or final exit is (35m minus 9m) 26m.

Note 2: Where there are small higher risk-areas this travel distance should apply. Where the risk assessment indicates that the whole building is higher risk, ask advice from a competent person.

Note 3: In areas of assembly such as function rooms, bars or restaurants which are completely separated from the sleeping accommodation then the travel distances in the assembly guide can be used for those areas, eg for a normal fire-risk area, 45m where more than one route is provided and 18m where only a single escape route is provided.

Note 4: Travel distances for normal fire-risk flats and maisonettes are illustrated in Part 2 section 4.7 typical building examples, figures 60, 61 and 62.

Note 5: An individual dwelling in a house of multiple occupation or flat and maisonette is a private dwelling and outside the scope of the fire safety law (except for the requirement to maintain common fire precautions, eg fire alarms or sprinkler installed throughout the building). Notwithstanding this, you might wish to consider the benchmarks in Table 4 if you are assessing the escape routes within the dwelling unit. Ideally the layout of individual dwelling units in houses of multiple occupation, flats and maisonettes, should be such that sleeping areas should be closer to the exit from the dwelling than kitchen areas or cooking facilities.

The travel distances given in Table 4 are based on those recommended in Approved Document B of the Building Regulations and are intended to complement the other fire safety recommendations in Approved Document B. Your current escape route travel distances may be different from these since they may be based on recommendations made in alternative guidance.

The travel distance for lower risk premises should only be applied in exceptional cases in the very lowest risk premises where densities are low, occupants are familiar with the premises, excellent visual awareness, and very limited combustibles.

The figures that follow are schematic only and are intended to represent part of a larger building.

Measuring travel distance

The route taken through the room or space will be determined by the layout of the furniture (Figure 26). It is good practice to ensure the routes to the room exits are kept as direct and as short as possible, especially in accommodation where sleeping will occur thus reducing the time taken to exit the room. In a small room, eg a bedroom, there will usually only be one

exit, but in a larger room, eg a ballroom, there may be many exits.

In some cases where furniture is often moved around or the use is liable to frequent change, such as ballrooms, conference halls you should ensure that exits from the room do not become inadvertently blocked or the escape route from the room is significantly extended.

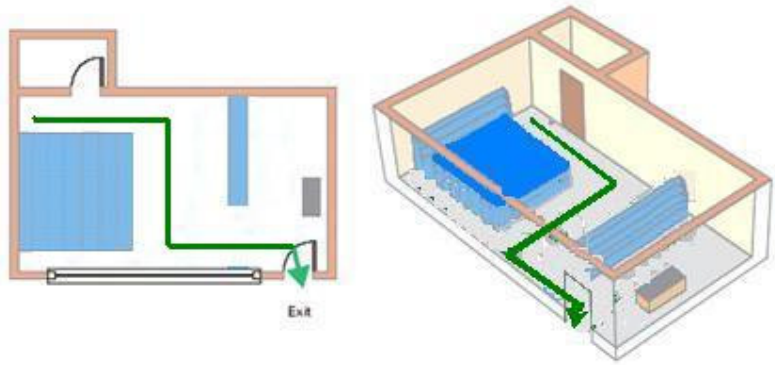


Figure 26 Measuring travel distance

Alternative exits from a space or room should be wherever possible located at least 45° apart unless the routes to them are separated by fire-resisting construction (see Figure 27). If in doubt consult a competent person.

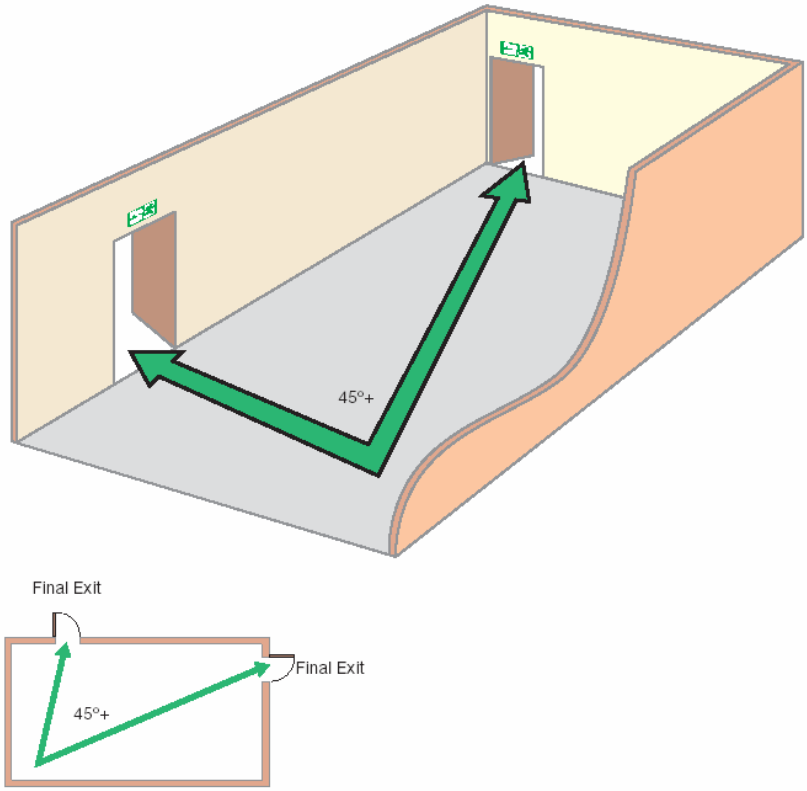


Figure 27 Alternative exits

Inner rooms

Where the only way out of a room is through another room, an unnoticed fire in the outer room could trap people in the inner room. This means of exit should be avoided where possible. If, however, this cannot be achieved then adequate warning of a fire should be provided by **any one** of the following means:

- Have enough clear glazed panels between the two rooms providing adequate vision to give an indication of the conditions in the outer room and the means of escape.
- Have a large enough gap between the dividing wall and the ceiling, eg 500 mm, so that smoke will be seen.
- Have an automatic smoke detector in the outer room that will sound a warning in the inner room.

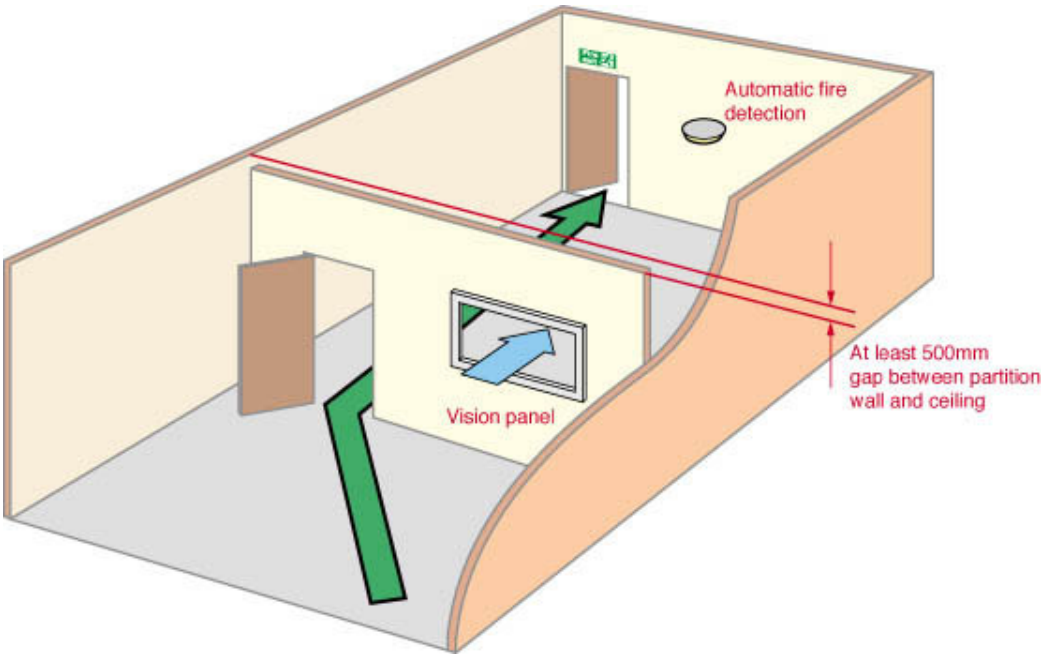


Figure 25 Inner rooms

In addition, the following points should also be considered:

- restrict the number of people using an inner room to 60;
- access rooms should be under the control of the same person as the inner room;

- the travel distance from any point in the inner room to the exit from the access room should be restricted (see Table 4), unless there are alternative exits from the access room;

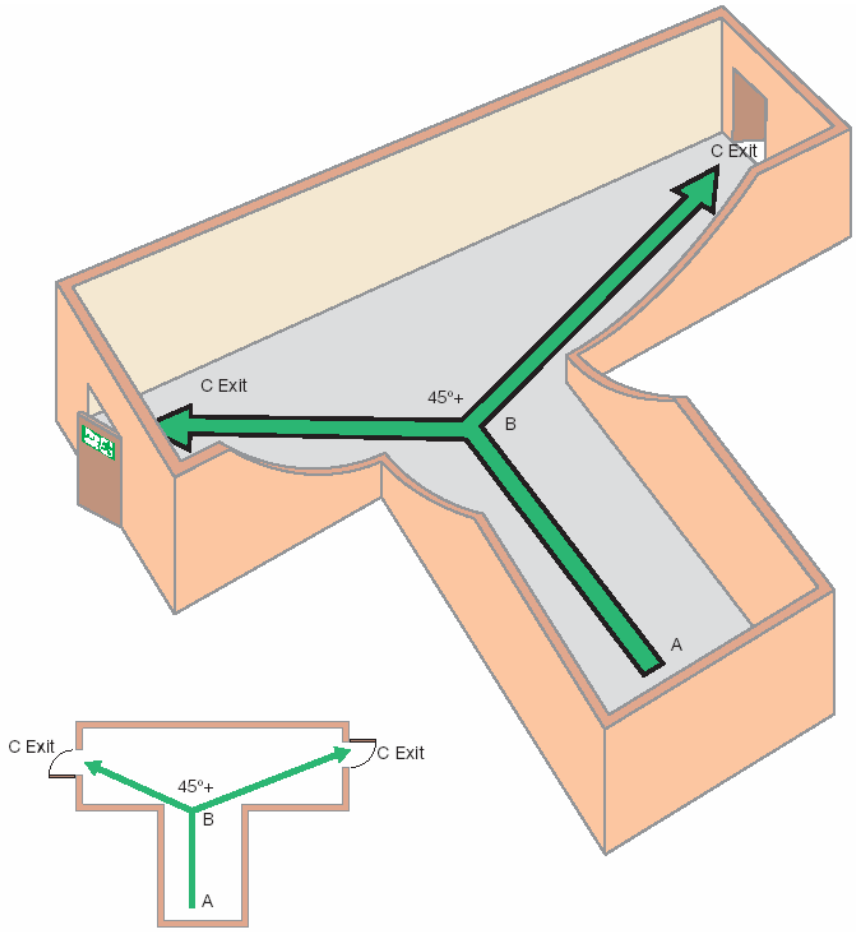
- no one should have to pass through more than one access room while making their escape;

- the outer room should not be an area of high fire risk.

- the inner room should only be used as sleeping accommodation if smoke detection is provided in the access room.

Measuring travel distances for initial dead-end travel

Where the initial direction of travel is in one direction only (see Figures 28a and 28b, distance A-B), this should be limited to a “single escape route” in Table 4. Any alternative exits should be positioned to ensure a fire will not compromise both exits. The maximum total travel distance recommended in Table 3 should apply to the nearest exit (Figures 28a and 28b, distance A-C), your total travel distance should not exceed that for “more than one escape route” in Table 3.



A-B Travel in single direction only

A-C Total travel distance (to nearest exit)

Figure 28a Measuring travel distance from initial dead end (open plan)

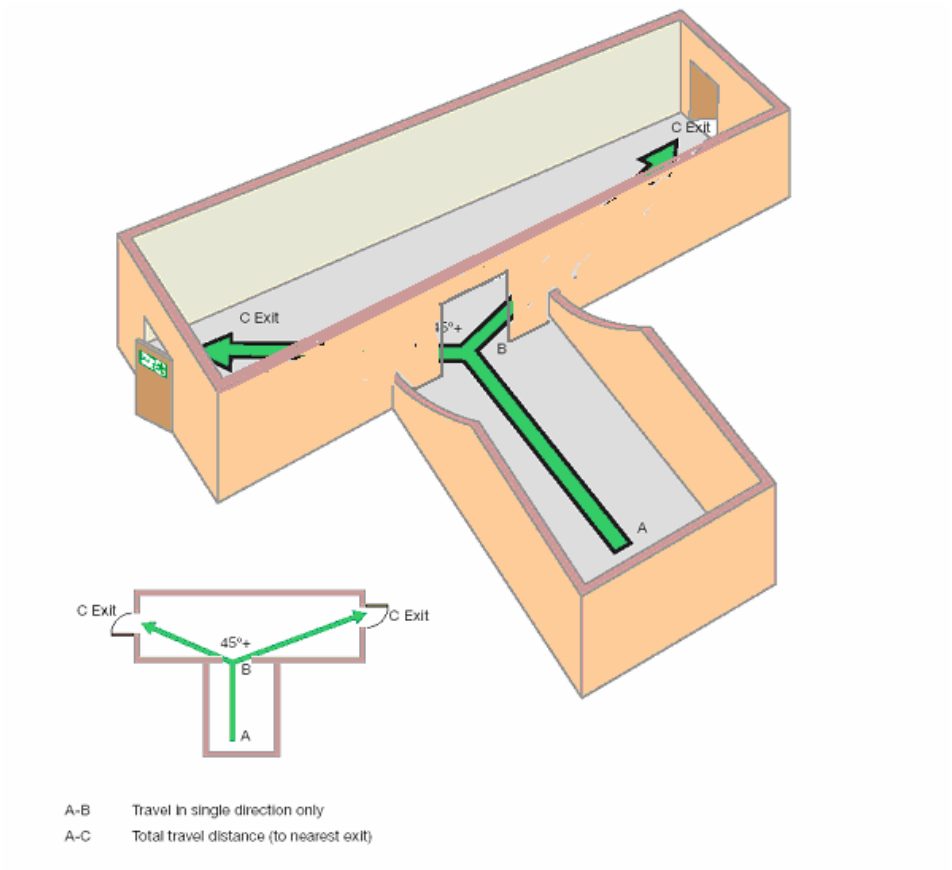


Figure 28b Measuring travel distance from initial dead end (inner room)

Movement of persons up or down a group of not less than 3 steps will be so obvious to those following that they will be prepared for the change in level, but movement up or down one step is not so readily observed and may easily lead to a fall. Wherever practicable, differences of level in corridors, passages and lobbies should be overcome by the provision of inclines or ramps of gradients not exceeding I in 12 or steps not having less than 3 risers in any flight. And all corridors and passages should be level for a distance of 1.5 metres in each direction from any steps.

Any mirrors situated in escape routes should be so sited that persons escaping from a fire will not be thrown into confusion by any reflected image of the route they are using, or be misled as to the direction they should take to reach fire exits.

Areas with dead-end conditions

If your premises has areas from which escape can be made in one direction only (a dead end), then an undetected fire in that area could affect people trying to escape. To overcome this problem, limit the travel distance (see Table 4) and use one of the following solutions.

In non-sleeping areas:

- Fit an automatic fire detection and warning system in those areas where a fire could present a risk to the escape route, if not already in place (see Figure 29).

- Construct the exit route of fire-resisting partitions and self-closing fire doors to allow people to escape safely past a room in which there is a fire (see Figure 30).

- Provide an alternative exit (see Figure 31).

Alternative approaches may be acceptable, although expert advice may be necessary.

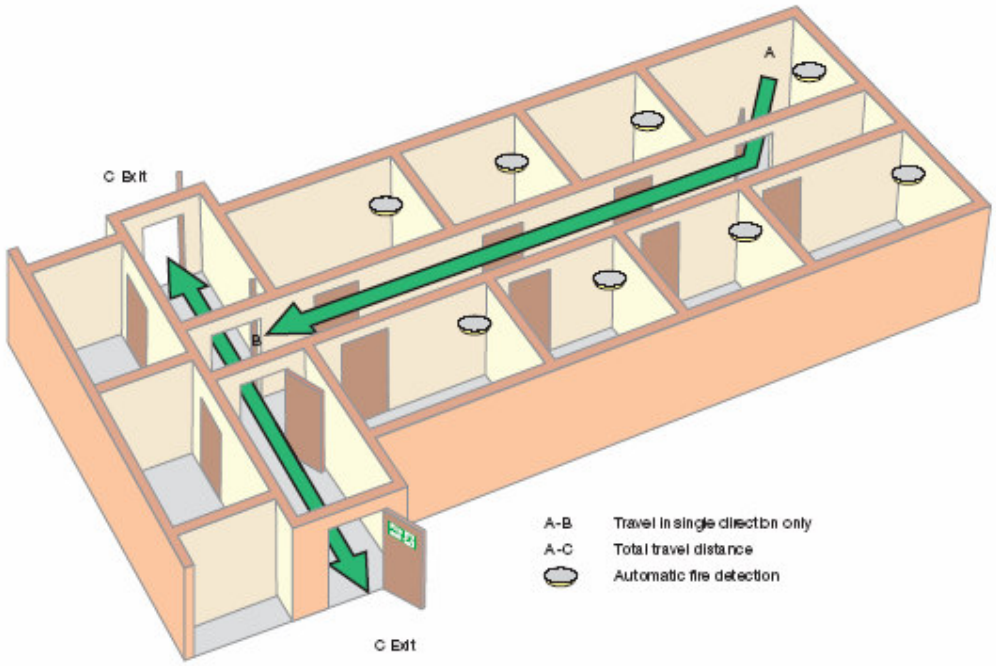


Figure 29 Dead-end condition with automatic fire detection (in non-sleeping areas)

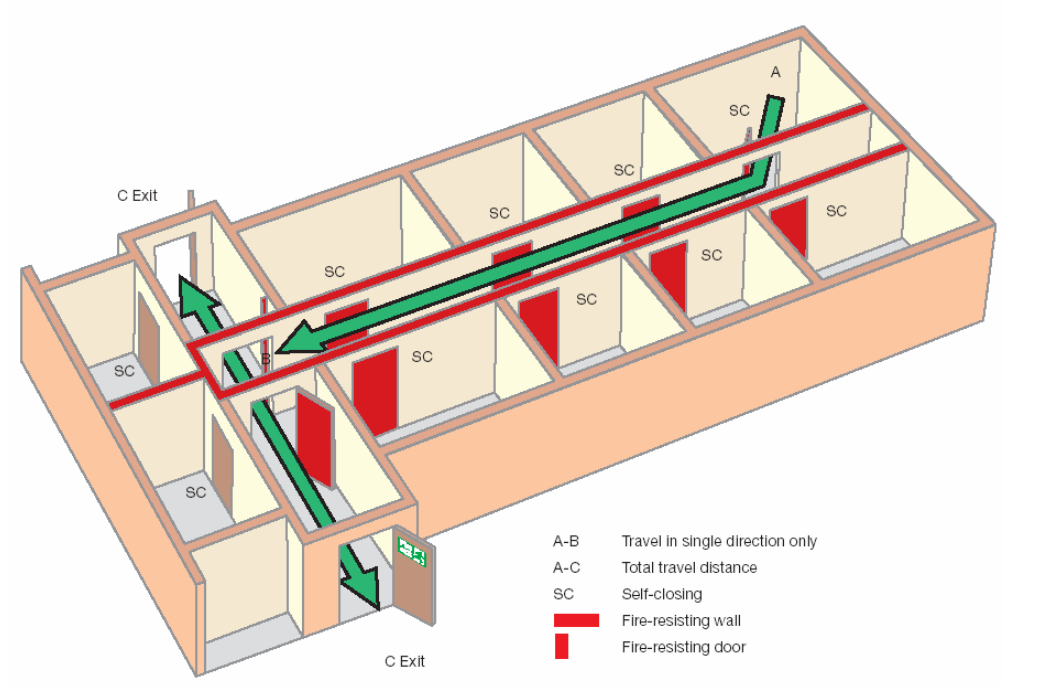


Figure 30 Dead-end condition with fire-resisting construction (in non-sleeping areas)

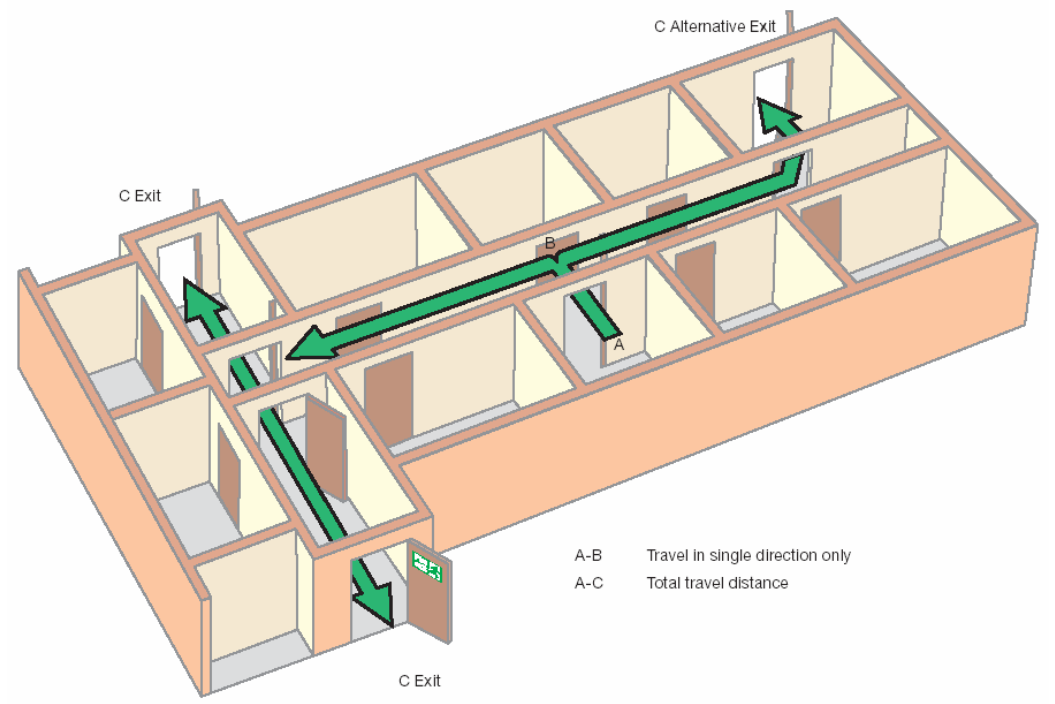


Figure 31 Dead-end condition provided with an alternative exit (C) (in non-sleeping areas)

In sleeping areas, the layout shown in Figure YY will generally be required. However if your premises is supplemented by other fire protection measures (eg an automatic fire suppression system) then an alternative approach may be possible with expert advice.

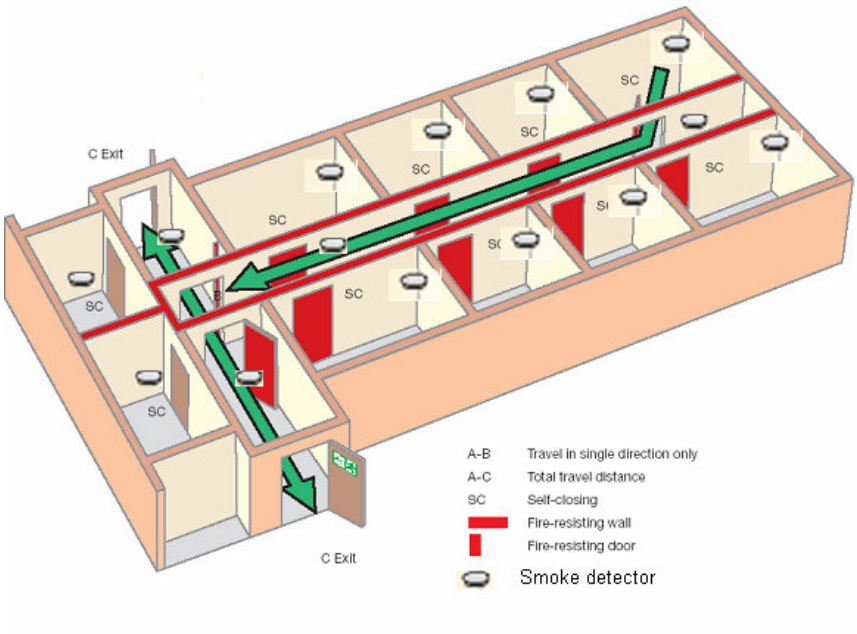


Figure YY Dead end condition with fire resisting construction and automatic fire detection (in sleeping areas)

Subdivision of corridors

If your premises have corridors more than 30 m long, then generally these corridors should be subdivided near the centre of the corridor with fire doors and, where necessary, fire-resisting construction to limit the spread of fire and smoke and to protect escape routes if there is a fire.

Where a corridor serves two exits from a floor, generally 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, are capable of resisting the passage of smoke, and are self-closing. Smoke should not be able to bypass these doors, eg above a false ceiling, or via alternative doors from a room, or adjoining

rooms, opening on either side of the subdivision.

Generally, false ceilings should be provided with barriers or smoke stopping over any fire doors. Where the false ceiling forms part of the fire-resisting construction this may not be necessary.

If you have doubts about subdivision of corridors, ask advice from a competent person

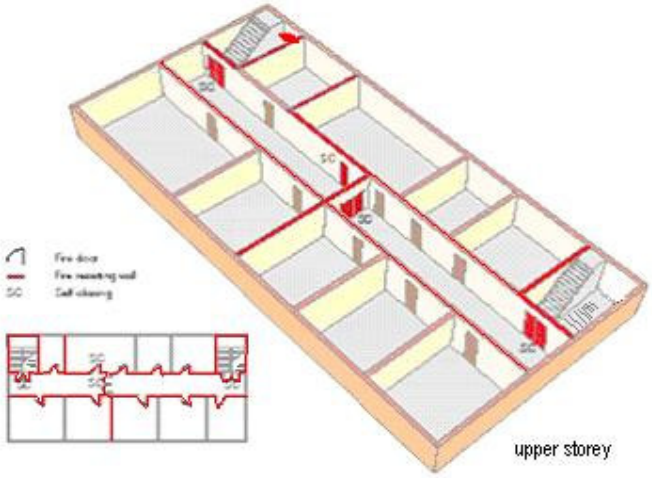


Figure 33 Subdivision of corridor between two stairways

Stairway enclosures

In most premises designed and built to Building Regulations and served by more than one stairway, it is probable that these stairways will be protected by fire-resisting construction and will lead to a final exit. If any floor has an occupancy of over 60 each storey should have at least two exits i.e. protected routes. The figure of 60 can be varied in proportion to the risk, with lower risk the figure may be slightly increased, and with higher risk lower numbers of persons may be appropriate.

If you have a protected stairway(s) then it is essential that you maintain that level of fire protection.

It is possible that you may have some stairways which have no fire protection to them that are not designed for escape are normally known as accommodation stairways.

If the building you occupy has floors which are occupied by different organisations to your own you need to consider, as part of your fire risk assessment, the possibility that a fire may occur in another part of the building over which you may have no control and which may affect the protected stairway if allowed to develop unchecked. If your fire risk assessment shows that this may be the case and people using any floor would be unaware of a developing fire, then additional fire-protection measures may be required, eg an enhanced automatic fire-detection and warning system. If this is required you will need to consult and co-operate with other occupiers and building managers.

You may find that stairways in your building are provided with protected lobbies or corridors at each floor level (except the top floor). Although these are not generally necessary for means of escape in multi-stairway buildings of less than 18 m high, they may have been provided for other reasons (eg fire-fighting access). In all cases protected corridors, lobbies and stairways must be kept clear of combustibles and obstructions.

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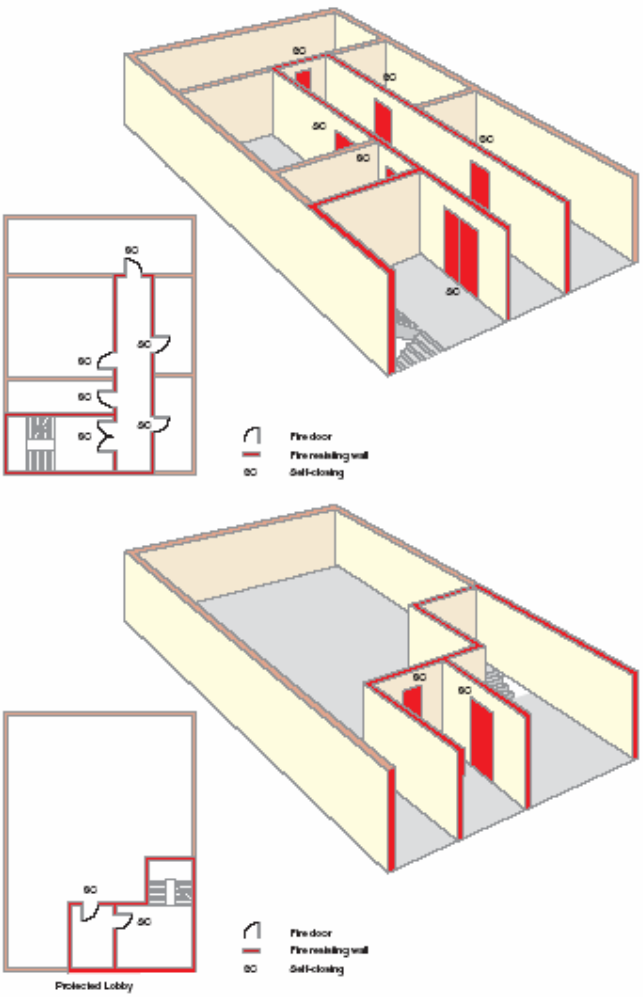


Figure 34 Examples of a stairway with protected lobby/corridor approach

Ideally stairway enclosures should lead directly to a final exit. If your premises for sleeping accommodation has only one stairway from the upper floor(s) which does not lead directly to a final exit, adopt one of the following arrangements:

- provide a protected route from the foot of the stairway enclosure leading to a final exit; or
- provide two exits from the stairway, each giving access to a final exit via routes which are separated from each other by fire-resisting construction.

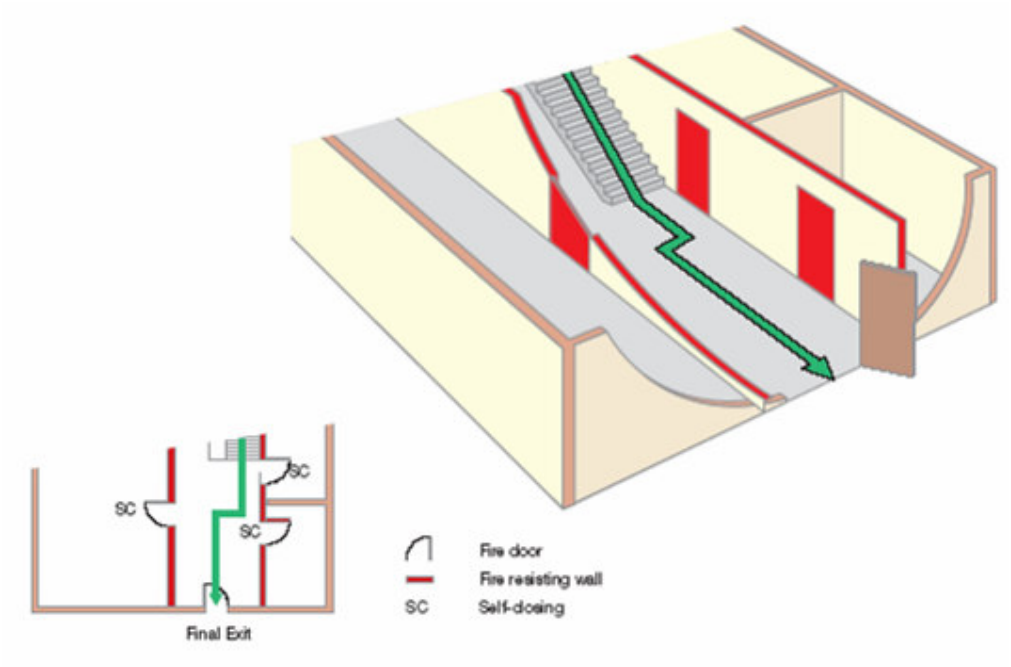


Figure 35 Examples of a protected route from a stairway to a final exit

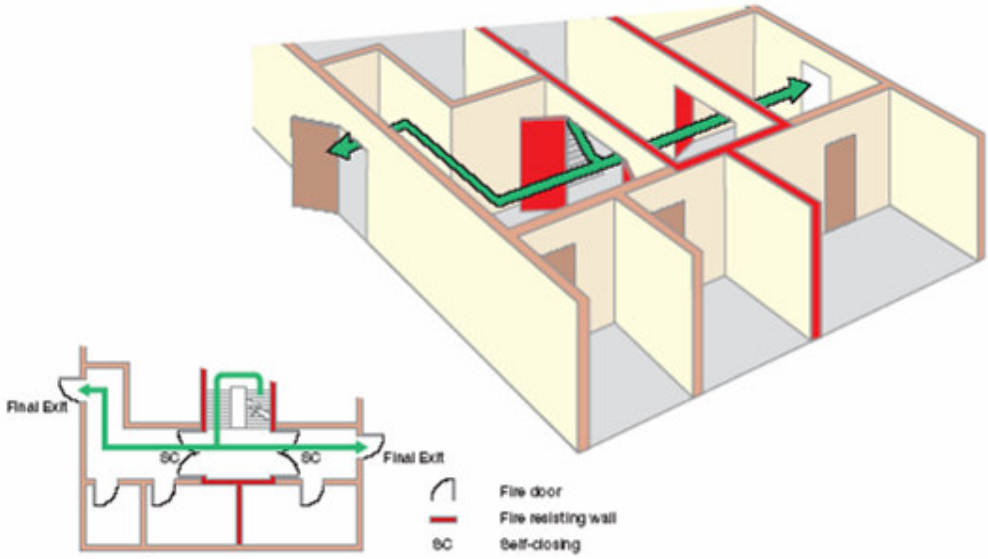


Figure 36 Example of two escape routes from a stairway to final exits

Separation of protected stairways

Where there are two or more protected stairways, the routes to final exits should be separated by fire-resisting construction so that fire cannot affect more than one escape route at the same time.

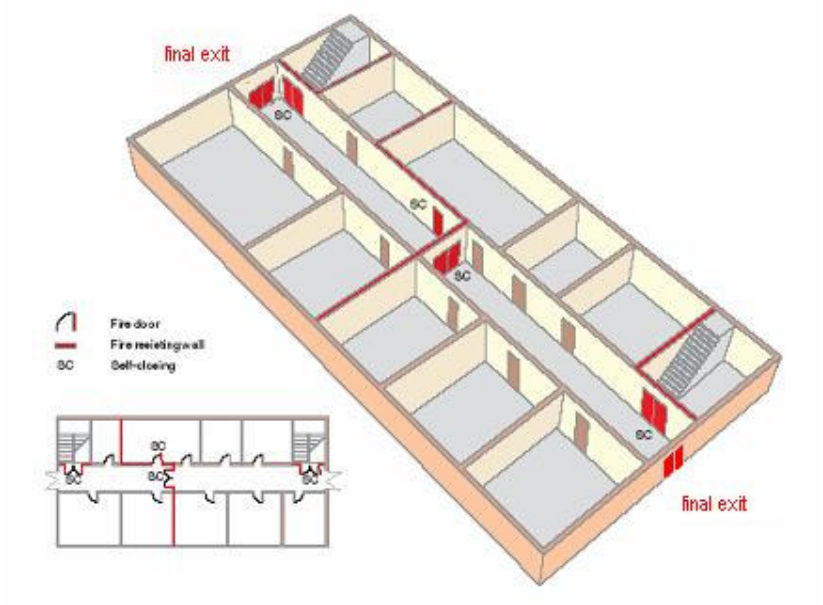


Figure 37 Separation of protected stairways

Creating a stairway bypass route

No one should have to pass through a protected stairway to reach another stairway. Options to avoid this include:

- using intercommunicating doors between rooms adjacent to the stairway, such doors must be available at all times when the building is occupied;
- using balconies and other features to bypass the stairway;
- as long as there is enough space, create a bypass corridor around the stairway enclosure;
- Bypass routes should not be provided through bedrooms.

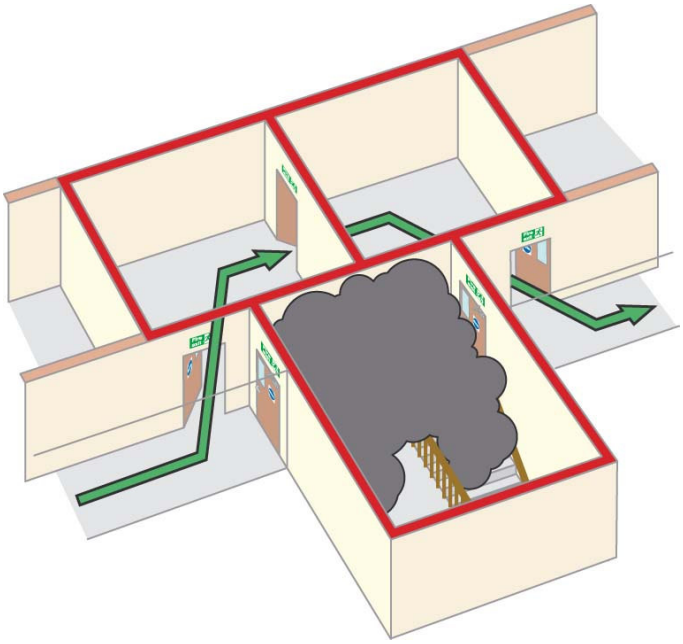


Figure 38 A stairway bypass route

Reception areas

Reception or enquiry areas should only be located in protected stairways where the stairway is not the only protected one serving the upper floors, the reception area is small (less than 10 m^2) and is of low fire risk.

Accommodation stairways

If you have stairways that are used for general communication and movement of people in the premises, and they are not designated as fire escape stairs then these are called 'accommodation stairways'. However, experience shows that many people will continue to use these as an escape route.

Accommodation stairways need not be enclosed at ground floor level but they should be enclosed at all other levels, and separated from each other at ground floor level by a minimum of 30 minutes fire resisting construction.

Accommodation stairways and escalators should not normally form an integral part of the calculated escape routes, however, where your fire risk assessment indicates that it is safe to do so, then you may consider them for that purpose.

External stairways

To be considered a viable escape route, an external stairway should normally be protected from the effects of a fire along its full length. This means that any door, window (other than toilet windows) and walls within 1.8 m horizontally and 9 m vertically below any part of the stairway should be fire resisting, windows should be fixed shut and doors self-closing.

Consider protecting the external stairway from the weather as the treads may become slippery, eg due to algae, moss or ice. If this is not possible, you must ensure that the stairway is regularly maintained. Consider fixing non-slip material to the treads.

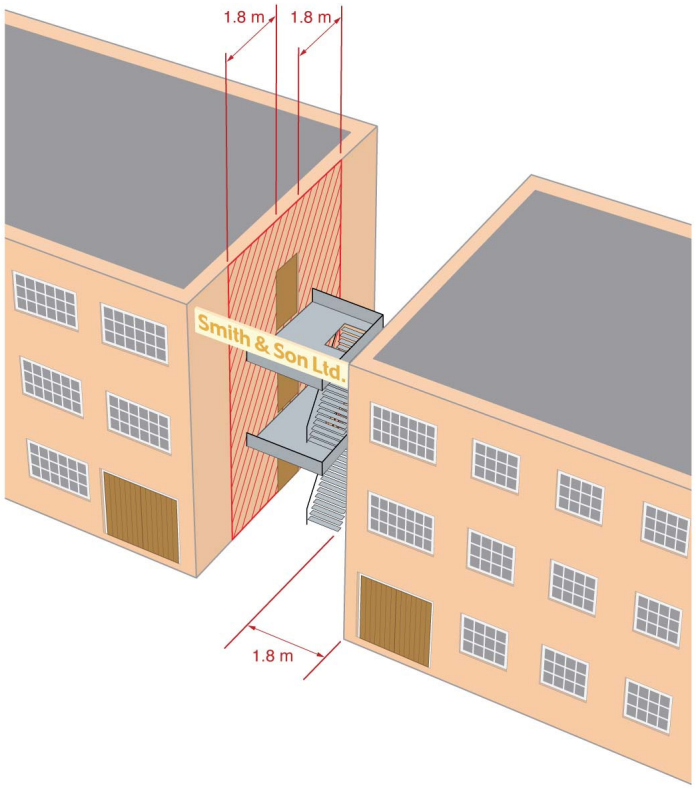


Figure 39 Protection to an external stairway

Spiral and helical stairways

Existing spiral and helical stairways that do not conform to BS 5395-2[26] are acceptable only in exceptional situations, eg for a maximum of 50 people who are not members of the public. The stairway should not be more than 9 m in total height and not less than 1.5 m in diameter with adequate headroom. A handrail should be continuous throughout the full length of the stairway.

Spiral and helical stairways designed in accordance with BS 5395-2[26] may be used as means of escape by staff and may be used by the public if the stairways are type E (Public) under that standard, however, they are not normally suitable for young children.

Basement protection

In all buildings (other than small parts of premises), stairways serving upper floors should preferably not extend to the basement. All basements used by more than 60 members of the public, and where there are no exits directly to a place of safety, should have at least two protected escape stairways.

Wherever possible all stairways to basements should be entered at ground 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, preferably by two 30 minute fire-doors, one at basement and one at ground floor level (see Figure 32).

Floors over a basement should provide 60 minutes fire resistance. For smaller premises 30 minutes may be acceptable.

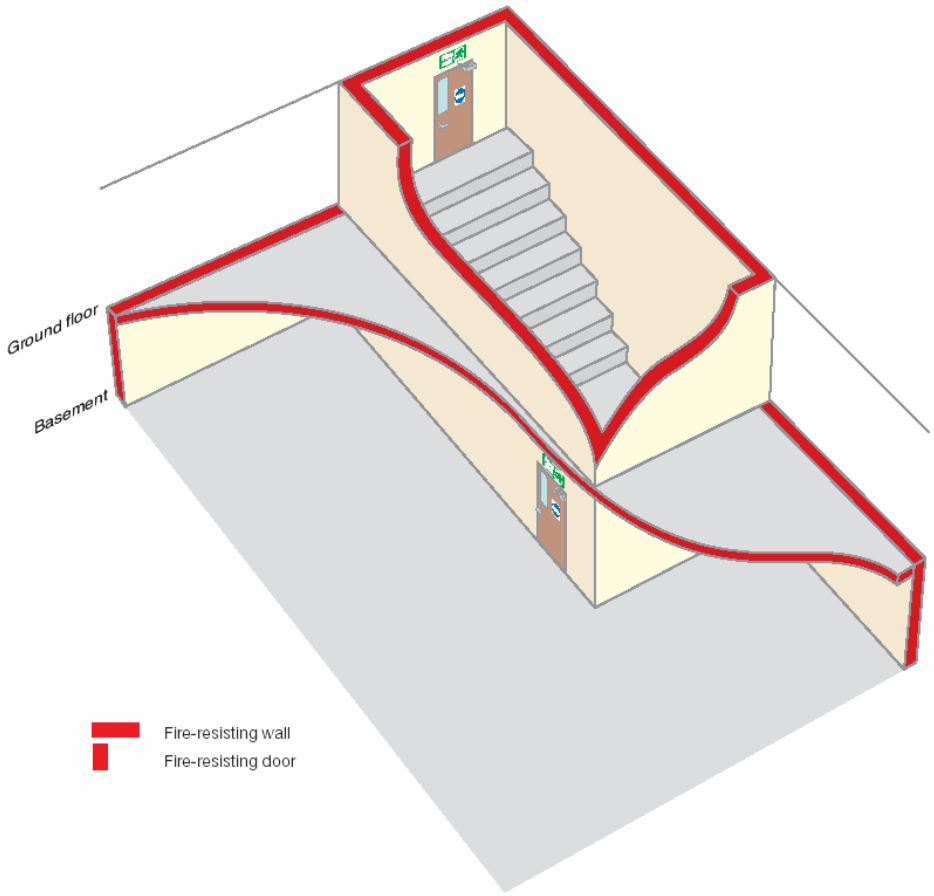


Figure 32 Basement protection

Lifts

Due to the danger of the power supplies to a lift being affected by a fire, lifts not specifically designed as 'fire-fighting' or 'evacuation' lifts are not normally considered acceptable as a means of escape. However, where a lift and stairway for a means of escape are incorporated in a fire resisting shaft which has a final exit from it at the access level and the lift has a

separate electrical supply to that of the remainder of the building, than that lift subject to an agreed fire risk assessment, may be acceptable as a means of escape in case of fire.

Lifts are housed in vertical shafts that interconnect floors and compartments, therefore precautions have to be taken to protect people from the risk of fire and smoke spreading from floor to floor via the lift shaft. Such precautions may include:

- Separating the lift from the remainder of the story using fire resisting construction and access via a fire door;
- Ensuring the lift shaft is situated in a protected enclosure which may also be a stairway enclosure;
- Providing ventilation of at least 0.1 m^2 at the top of each lift-well to exhaust any smoke.

Escape away from the building

Having good escape routes to a final exit will be of little benefit if the occupants are not able to get out of the building and to a place of total safety.

Roof exits

It may be reasonable for the escape route to cross a roof. Where this is the case, additional precautions will normally be necessary:

- The roof should be flat and the route across it should be adequately defined and well-illuminated where necessary with normal electric and emergency lighting. The route should be non-slip and guarded with a protective barrier.
- The escape route across the roof and its supporting structure should be constructed as a fire-resisting floor.
- Where there are no alternatives other than to use a roof exit, any doors, windows, roof lights and ducting within 3 m of the escape route should be fire-resisting.
- The exit from the roof should be in, or lead to, a place of reasonable safety where people can quickly move to a place of total safety.
- The need to have a robust legal agreement to move over and into another persons premises, and appropriate legal agreements to ensure maintenance of the escape route.

- These should not normally be used by members of the public and young children.
- If your risk assessment deems that the roof exit is acceptable for residents/guests to use for means of escape then the route should be clearly defined and residents/guests are informed of this alternative route.

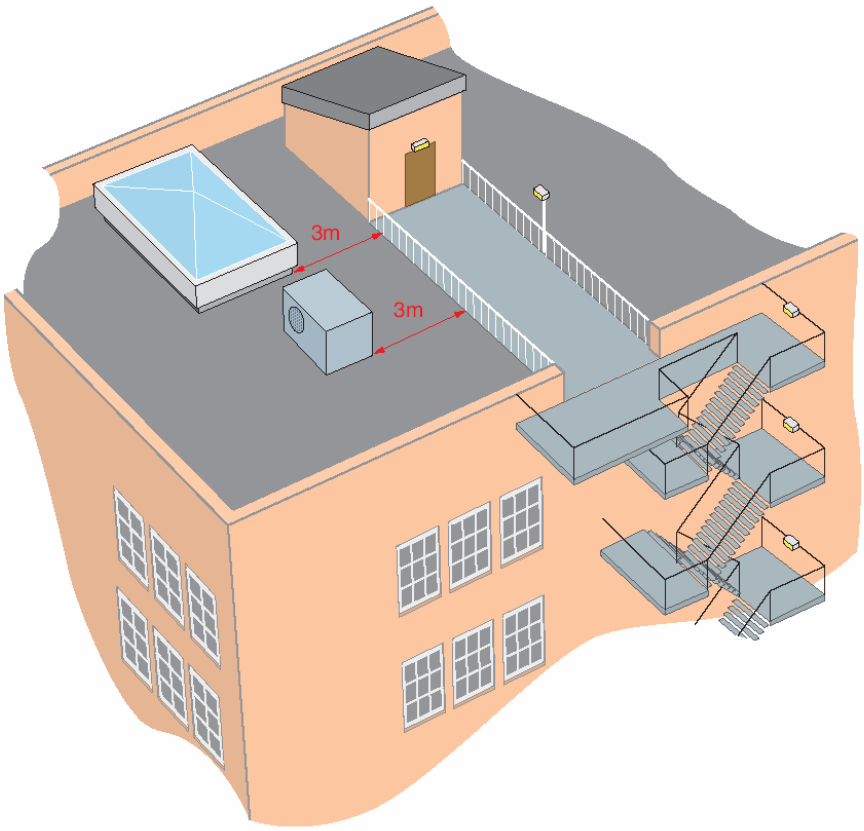


Figure 40 An escape route across a roof

External escape routes should receive routine inspection and maintenance to ensure they remain fit for use. Where an escape route passes through or across another persons property you will need to ensure that apppropriate legal agreements are in place covering the use and maintenance of the escape route.

Revolving doors, wicket doors and roller shutters

Revolving doors should not normally be considered as escape doors unless the leaves fold outward to form a clear opening upon pressure from within or standard doors of the required exit width are provided next to the revolving door.

Ideally wicket doors or gates should have a minimum opening height of 1.5 m. The bottom of the door should not be more than 250 mm above the floor and the width should be preferably more than 500 mm but not less than 450 mm. Normally wicket doors will only be suitable for up to 15 members of staff however, in areas of a higher fire risk, this should be reduced to a maximum of three.

Loading and goods delivery doors, shutters (roller, folding or sliding), up-and-over doors and similar openings are not normally suitable for use as a final exit. However, they may be suitable for escape from areas of normal risk by small numbers of staff as long as they are not likely to be obstructed and can be easily and immediately opened manually, even if normally power-operated. These are normally only acceptable for people familiar with the escape routes and operation of the doors.

Final exit doors

Good escape routes to a final exit will be of little benefit if the occupants are not able to get out of the building and quickly disperse from the area. It is important to consider where people will go once they have evacuated the premises.

The matters that you should consider include the following:

- It is important that final exit doors can also be quickly and easily opened without a key or code in the event of a fire. Where possible, there should be only one fastening. See Appendix B3 for more information on security fastenings.

- The final exit door should not lead people into an enclosed area from which there is no further escape.

- The final exit door should lead to a place of total safety.

- Whether the route away from the premises needs to be clearly defined, illuminated, signposted, and if necessary protected by guardrails. Consider the proximity of other building outlets, such as ventilation and refuse shafts, which may emit smoke and heat from the fire.

- Dangers once away from the building e.g. busy roads, people traffic passing the building, ventilation outlets that may affect people on their way out.

Your fire risk assessment must take into account factors such as the mobility of the people who may be expected to use the doors and the accessibility of door opening devices.

4.7 Typical building examples

The following are examples of generally acceptable escape route layouts to ensure the safety of people using the premises. These are not intended to be prescriptive or exhaustive but merely to help you understand how the principles of means of escape may be applied in practice.

They are illustrative of the key features of escape route layouts and not intended to be real building layouts or to scale.

You do not need to read all of this section, you only need to consider those diagrams which most closely resemble your premises. If your building does not resemble these then you should seek expert advice. These examples are intended to represent your existing layout; they are not to be used as design guidance.

In all of these examples the following basic principles apply:

- The farthest point on any floor to the final exit or storey exit to a protected stairway is within the overall suggested travel distance (see Table 4).
- The area near the exit is kept clear of combustibles and obstructions.
- The protected fire-resisting stairway is kept clear of combustibles and obstructions.
- The escape route leads to a final exit.
- High-risk rooms do not generally open directly into a protected stairway.
- If your fire risk assessment shows that people using any floor would be unaware of a fire you may require additional fire-protection measures, eg an enhanced automatic fire-detection and warning system.
- There should be more than one escape route from all parts of the premises (rooms or storeys) except for areas or storeys with an occupancy of less than 60. The figure of 60 can be varied in proportion to the risk, for a lower risk there can be a slight increase, for a higher risk, lower numbers of persons should be allowed.

Table 6 Typical building examples

Single storey buildings or the ground floor of a larger building	
Premises with a single exit (may include mezzanine)	See Figure 42
Premises with more than one exit	See Figure 43
Multi-storey buildings with more than one stairway	
Two storey premises	See Figure 45
Three storey premises including a basement (basement, ground and first floor)	See Figure 47
Three and four storey premises (ground and three upper storey premises)	See Figure 48
Tall multi-storey building fitted with a fire-fighting shaft	See Figure 51
Multi-storey buildings with a single stairway	
Two storey premises (small)	See Figure 48x
Three storey premises (ground and up to two upper storeys)	See Figure 44
Four storey premises (ground and three upper storeys)	See Figure 46
Flats and maisonettes	
Premises with more than one stairway	See Figure 60
Premises with a single stairway (ground and up to three upper storeys)	See Figure 61
Premises with a single stairway and automatic vent	See Figure 62

If you do not have any of the stairway configurations given, and depending on the outcome of your fire risk assessment it may be that you can achieve an equivalent level of safety by other means.

The green arrows on the Figures 42-50 represent the travel distances given in Table 4 which should be applied

If your building has more than ground and three upper storeys, ask advice from a competent person.

Single storey buildings or the ground floor of a larger building

Ground floor premises with a single exit (may include a mezzanine)

Part of your premises may have only a single exit. Part of the premises served only by a single exit (ie ground floor and mezzanine in total) should accommodate no more than 60 people. The layout shown in Figure 42 will be generally acceptable.

If the area is a sleeping area you will require automatic fire detection, as suggested in Table 2.

If your fire risk assessment shows that people using mezzanine or cellular room would be unaware of fire elsewhere in the building, it may require additional fire-protection measures, eg an automatic fire-detection and warning system in non-sleeping areas.

A mezzanine covering more than half of the floor area may need to be treated as a separate floor (see two storey buildings, see figure 44 and 48).

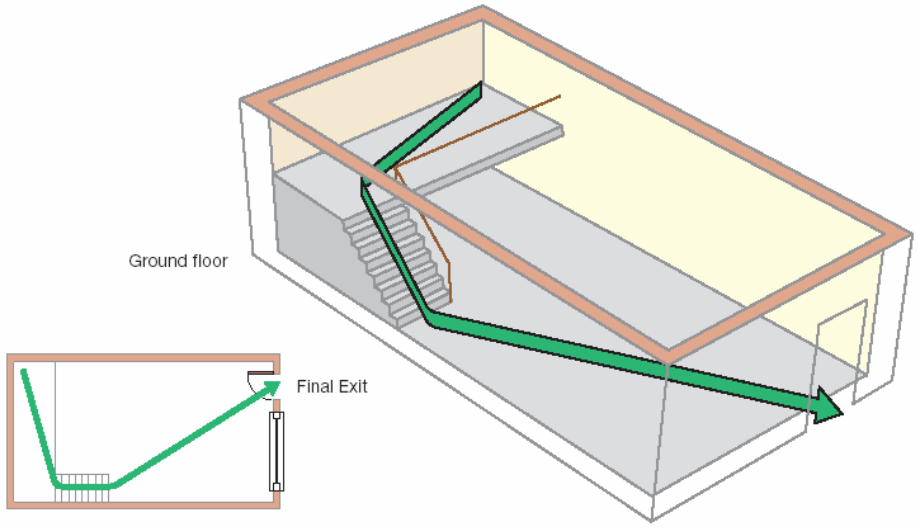


Figure 42 Ground floor premises with a single exit (including a mezzanine)

Ground floor premises with more than one exit

Figure 43 shows an acceptable example of a premises with more than one exit. In sleeping areas the corridor will be a protected route with fire-resisting construction and self closing fire doors for a cellular layout (see plan view below).

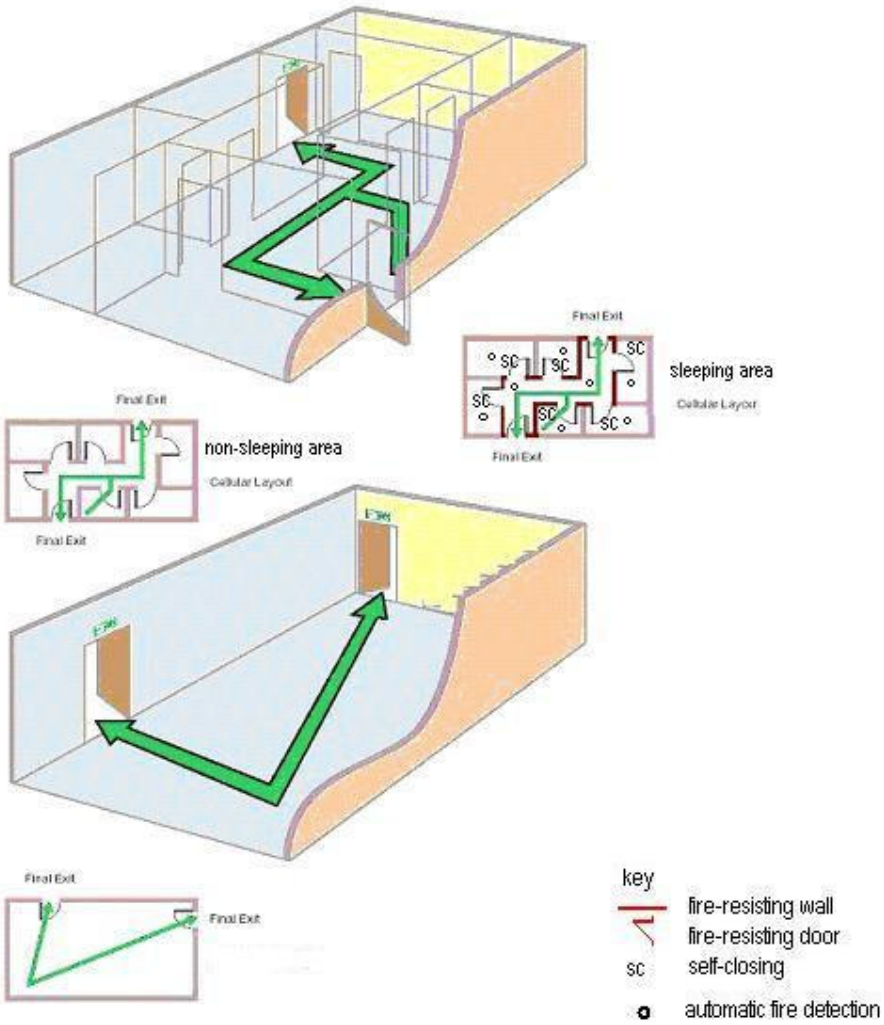


Figure 43 Ground floor premises with more than one exit. The figure shows a cellular layout for non-sleeping areas and a cellular layout for sleeping areas, with bedrooms and protected corridors.

Multi-storey buildings with more than one stairway

Stairways, if unprotected from fire, can rapidly become affected by heat and smoke, cutting off the escape route and allowing fire spread to other floors. However, if adequately protected, escape stairways can be regarded as places of reasonable safety to enable people to escape to a place of total safety.

In the majority of multi-storey premises, two or more stairways will be provided for escape purposes. Parts of premises that are provided with only a single stairway from upper floors or basement storeys are not normally suitable for more than 60 people as the smoke and heat from a fire can trap people (see later). If any floor has an occupancy of over 60 each storey should have at least two escape routes. The figure of 60 can be varied in proportion to the risk, lower risk slight increase, higher risk lower numbers of persons (see Part 2, section 4.1).

In most premises designed and built to building regulations and served by more than one stairway, it is probable that these staircases will be protected by fire resisting construction and lead to a final exit. It is possible that you may have some stairways which have no fire protection to them, these are normally known as accommodation stairways.

If you have a protected stairway(s) then it is essential that you maintain that level of fire protection. In the case of accommodation stairways it is not normal to consider them for means of escape purposes, however, where your fire risk assessment indicates that it is safe to do so, then you may consider them for that purpose. In these circumstances it may be necessary to seek expert advice to verify this.

The benefit of protecting stairways from the effects of fire is that it allows you to measure your travel distance from the furthest point on the relevant floor to the nearest storey exit rather than the final exit.

If the building you occupy has floors which are occupied by different organisations to your own, ie a multi-occupied premises, you need to consider as part of your fire risk assessment the possibility that a fire may occur in another part of the building over which you may have no control and which may affect the protected stairway if allowed to develop unchecked. If your fire risk assessment shows that this may be the case and people using any floor would be unaware of a developing fire, you may require additional fire-protection measures, eg enhanced automatic fire-detection and warning system. If this is required you will need to consult and co-operate with other occupiers and building managers.

You may find that stairways in your building are provided with protected lobbies. These may be for means of escape, or may have been provided for other reasons (eg fire-fighting access).

Where the building incorporates a basement, any stairway from the basement should be separated by a protected lobby or corridor between that basement and the protected stairway.

If you do not have a protected stairway and, depending on the outcome of your fire risk assessment, it may be that you can achieve an equivalent level of safety by other means. However, it is strongly recommended that you ask advice from a competent person.

Two storey premises with more than one stairway

If your premises has a ground floor and one upper storey, it is important to understand that you are unlikely to be able to meet the suggested travel distance to a final exit (see Table 4). Therefore stairways may need to be protected by a fire-resisting enclosure as shown. If the stairway serves bedrooms in a sleeping area, the corridor and stairways should be protected by a fire-resisting enclosure.

The layout shown in Figure 45 will be generally acceptable as long as the furthest point on each of your floors to the storey exit is within the overall suggested travel distance (see Table 4). The automatic fire detection should be as suggested in Table 2.

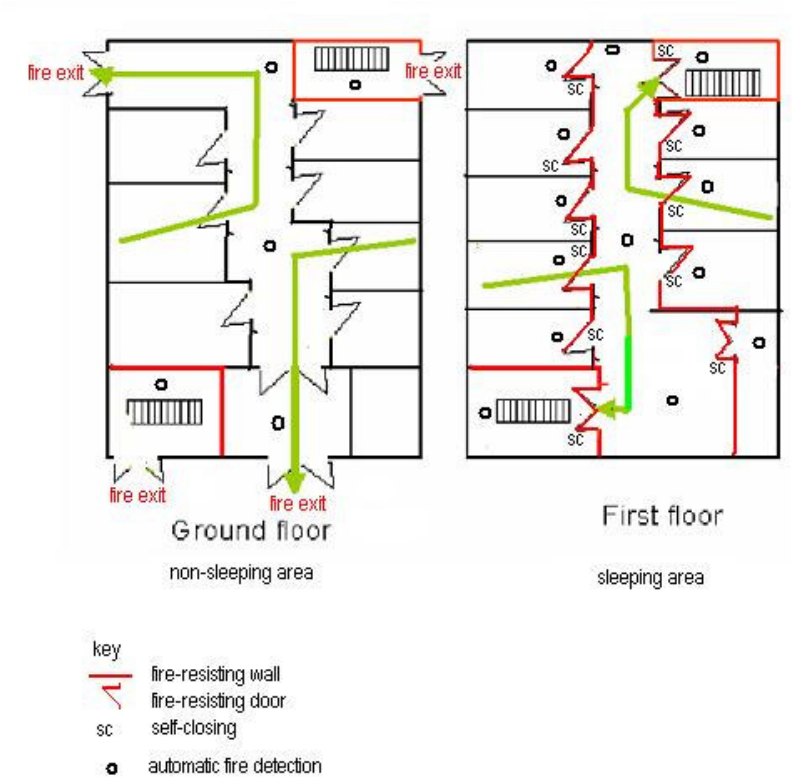


Figure 45 Two-storey premises with more than one stairway, the ground floor is non- sleeping areas, the first floor is a sleeping area.

Three-storey premises including a basement with more than one stairway

In premises with a basement, ground and first floor, served by more than one stairway the layout shown in Figure 47 will be generally acceptable as long as the following apply:

- If the basement is served by a single stairway then it should accommodate no more than 60 people.
- The farthest point in the basement to the door to the stairway is within the overall suggested travel distance (see Table 4).
- The stairway from the basement to ground floor level is separated by a fire-resisting lobby or corridor between that basement and the protected stairway.
- The floor between the ground floor and basement is fire resisting, eg 60 minutes.

This principle applies to taller buildings (up to 18 m), However, where your building has more than a ground and three upper storeys, ask advice from a competent person.

Figure shows distances to ***nearest*** stairway (or final exit).

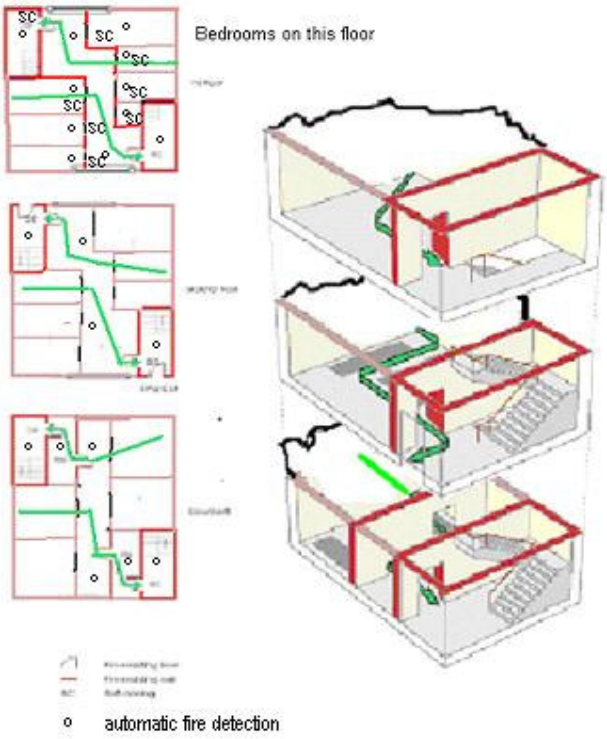


Figure 47 Three storey premises including a basement.

Ground and up to three upper storey premises (three and four storey premises) served by more than one stairway

In premises, with a ground floor and up to three upper storeys, served by more than one stairway, the layout shown in Figure 48 will be generally acceptable as long as the following apply:

- The furthest point on all of your floors to the storey exit is within the overall suggested travel distance (see Table 4).
- The stairways and corridors that serve sleeping areas are protected routes.
- Protected routes have 30-minute fire-resisting construction and all doors onto the route are self-closing fire doors.
- Access to the stairway from any room is through at least one fire door,
- The automatic fire detection is as suggested in Table 2.

This principle applies to taller buildings (up to 18 m), However, where your building has more than a ground and three upper storeys, ask advice from a competent person.

The Figure shows distances to ***nearest*** stairway (or final exit).

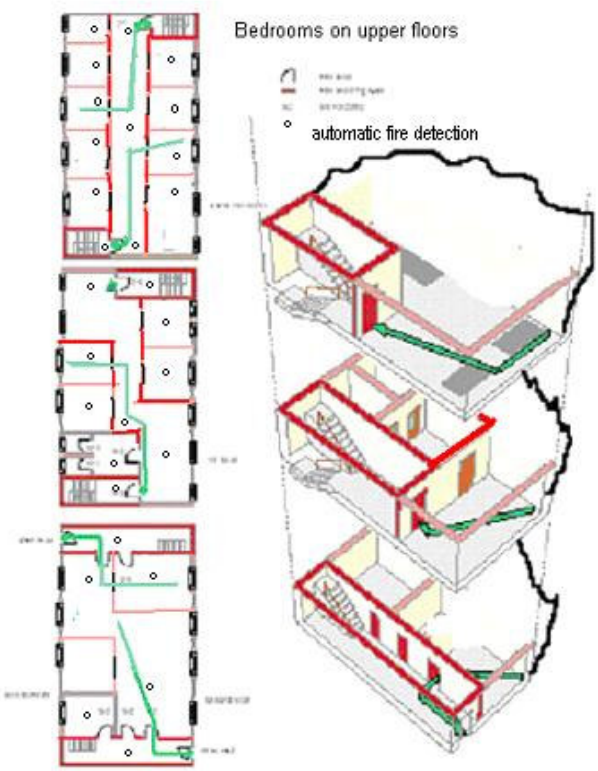


Figure 48 Premises, ground and up to three upper storeys with more than one stairway

Tall multi-storey building fitted with a fire-fighting shaft

Figure 51 shows a multi-storey building fitted with a fire-fighting shaft which is required for specific types of buildings. If the premises you occupy are situated in a building like this, you should ask the advice of a competent person. Further information may be found in BS 5588-5 [Ref X] and Approved Document B[24].

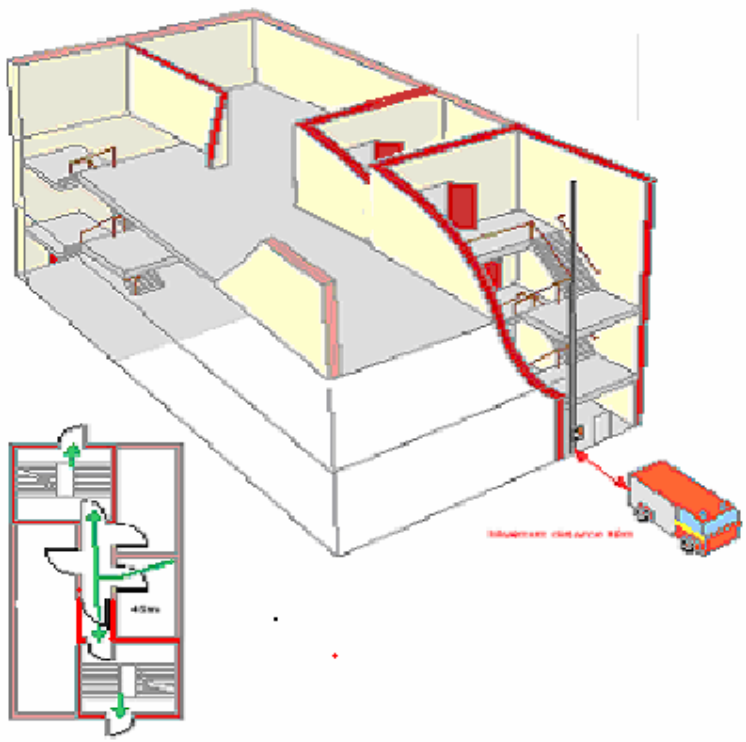


Figure 51 Tall premises showing a fire-fighting stair on one end of the premises

Multi-storey premises with a single stairway

In the majority of multi-storey premises, two or more stairways will be provided for escape purposes. Parts of premises that are provided with only a single stairway from upper floors or basements storeys are not normally suitable for more than 60 people as the smoke and heat from a fire can trap people. Similarly, if the ground floor of part of your premises has only a single final exit it should be limited to no more than 60 people.

However, if adequately protected, escape stairways can be regarded as places of reasonable safety to enable people to escape to a place of total safety.

Two storey premises with a single stairway (small)

If your premises has one upper storey, served by a single stairway, the layout in Figure 48x will be generally acceptable as long as the following apply:

- The furthest point on all of your floors to the storey exit is within the overall suggested travel distance (see Table 4), eg 18m travel distance from the furthest point to the protected stairway.
- The upper floor should accommodate no more than 60 people.
- The stairway is a protected route, completely enclosed in 30-minute fire-resisting construction and all doors onto the corridor and stairway are self-closing fire doors.
- Access to the stairway from any room is through one fire door,
- The automatic fire detection is as suggested in Table 2, eg a LD2 system in a small bed and breakfast.

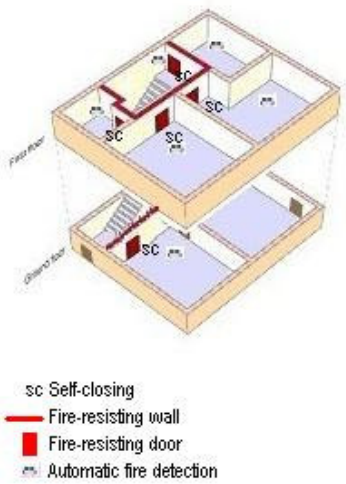


Figure 48x Small premises, two storeys with a single stairway.

Three storey premises with a single stairway

If your premises have a ground and up to two upper storeys, served by a single stairway, the layout in Figure 44 will be generally acceptable as long as the following apply:

- The furthest point on all of your floors to the storey exit is within the overall suggested travel distance (see Table 4).
- The upper floor is less than 11m above ground level.
- The upper floors should each accommodate no more than 60 people.
- The corridors serving bedrooms in sleeping areas and stairway are protected routes, completely enclosed in 30-minute fire-resisting construction and all doors onto the corridor and stairway are self-closing fire doors.
- Access to the stairway from any room is through one fire door
- The automatic fire detection is as suggested in Table 2, eg a L2 system in boarding house type accommodation.

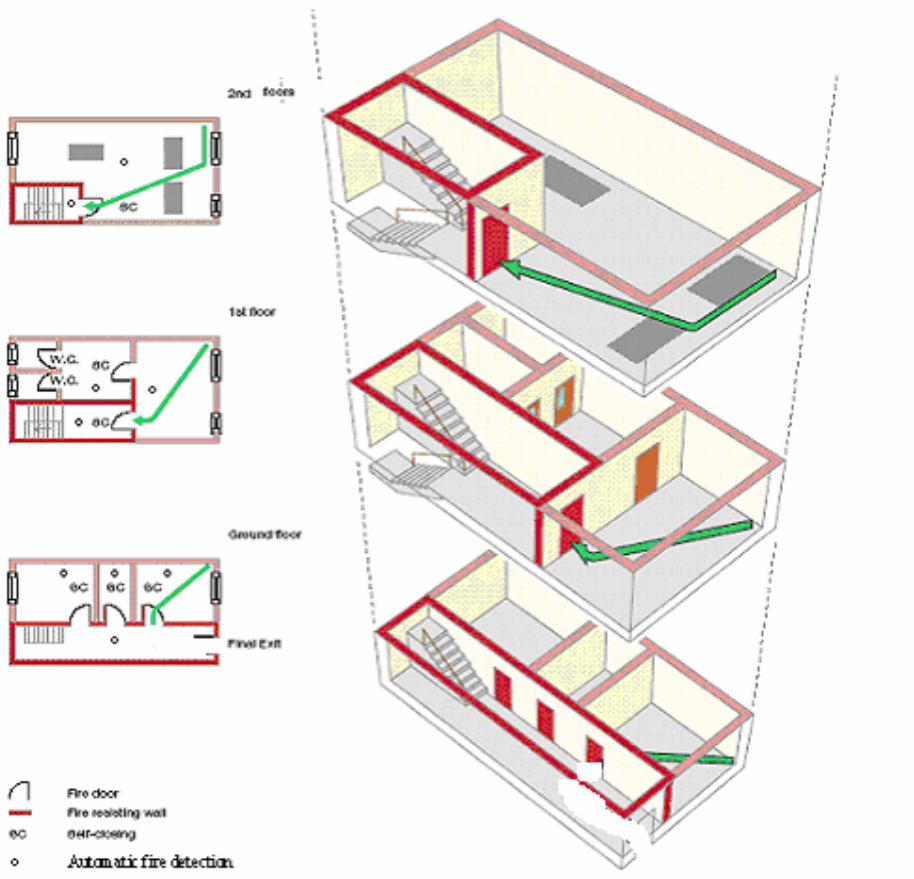


Figure 44 Three-storey premises with a single stairway

Four storey (ground and up to three upper storeys) with a single stairway

Because of the higher risk posed by a four storey premises with a single stairway, to protect the escape route by preventing smoke from entering the stairway, a protected lobby or corridor approach between the stairway and all floors should be provided.

The layout in Figure 46 will be generally acceptable as long as the following apply:

- The upper floors should each accommodate no more than 60 people.
- Access to the stairway from any room is through two fire doors (this can be achieved by utilising protected corridors or by the use of lobbies).
- The corridors serving bedrooms in sleeping areas and stairway are protected routes, completely enclosed in 30-minute fire-resisting construction and all doors onto the corridor and stairway are self-closing fire doors.
- The furthest point on all of your floors to the corridor/lobby exit is within the overall suggested travel distance (see Table 4).
- When a protected lobby or corridor approach to the stairway is employed the travel distance is measured to the storey exit and not the door to the lobby or corridor (exceptionally see Figure 62, apartment arrangement).
- The automatic fire detection is as suggested in Table 2.

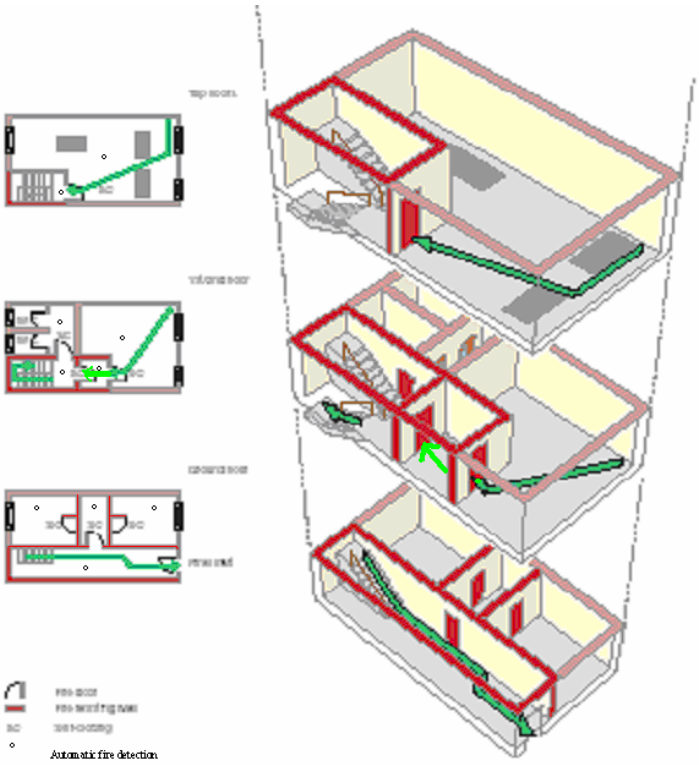


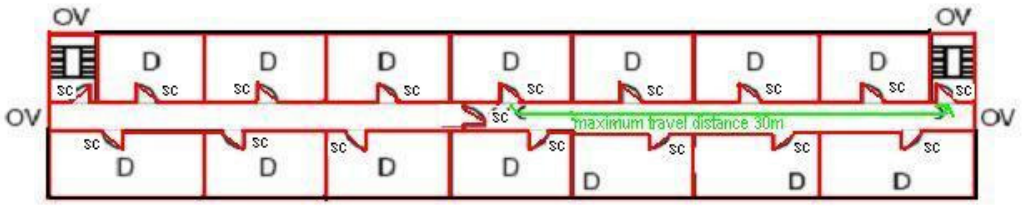
Figure 46 Four-storey premises, with a single stairway

Flats and maisonettes

Flats and maisonettes, with more than one stairway

In flats and maisonettes served by more than one stairway, the layout in Figure 60 will be generally acceptable as long as the following apply:

- Access to the stairway from a dwelling is through two fire doors, eg by using a protected corridor.
- The stairway is a protected escape route leading to a final exit.
- The travel distance from the dwelling entrance door to the common stair is limited 30m.



Key

___ = fire-resisting construction

OV = openable vent at high level for fire service use (1.0m^2 minimum free area)
D = dwelling
sc = self-closing fire door

Figure 60 Flats and maisonettes, with more than one stairway

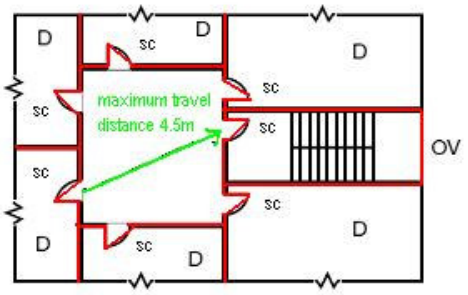
Flats and maisonettes, ground and up to three upper storeys, with a single stairway

If your premises have a ground and up to three upper storeys, served by a single stairway, the layout in Figure 61 will be generally acceptable as long as the following apply:

- The upper floor is less than 11m above ground.
- Access to the stairway from a dwelling is through two fire doors, eg by using a protected lobby.
- The stairway is a protected escape route leading to a final exit.

- The travel distance from the dwelling entrance door to the common stair is limited to 4.5m.

- If an automatic opening vent is provided in the lobby, the travel distance can be increased from 4.5m to 7.5m maximum



Key

—— = fire-resisting construction

OV = openable vent at high level for fire service use (1.0m^2 minimum free area)
D = dwelling
sc = self-closing fire door

Figure 61 flats and maisonettes, ground and up to three upper storeys, with a single stairway

Flats and maisonettes, with as single stairway and and automatic vent

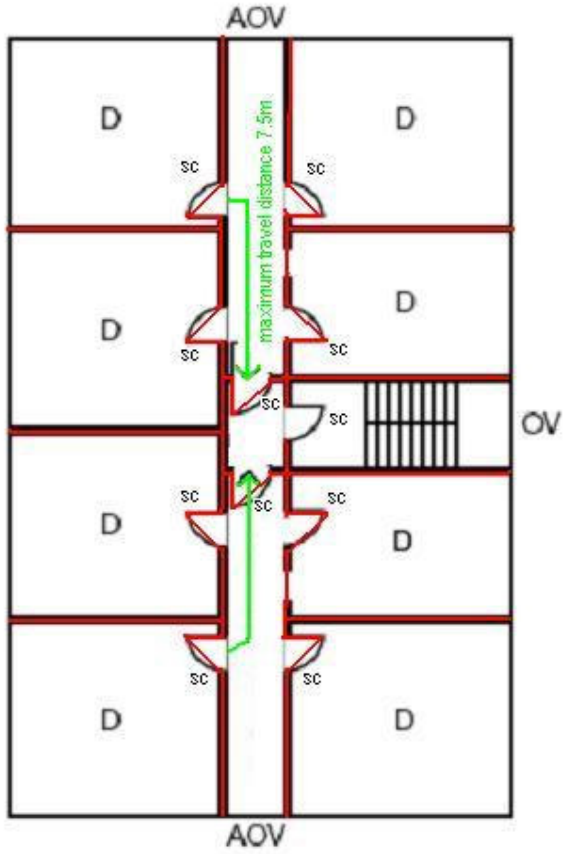
In flats and maisonettes served by a single stairway, the layout in Figure 62 will be generally acceptable as long as the following apply:

- Access to the stairway from a dwelling is through two fire doors, this is achieved by utilising a protected corridor.

- The stairway is a protected escape route leading to a final exit.

- The travel distance from the dwelling entrance door to the common stair is limited to 7.5m.

This principle applies to tall buildings. However, where your building has more than a ground and three upper storeys, ask advice from a competent person.



Key

AOV = automatic opening vent at high level (1.5 m^2 minimum free area)
___ = fire-resisting construction

OV = openable vent at high level for fire service use (1.0m^2 minimum free area)
D = dwelling
sc = self-closing fire door

Figure 62 Flats and maisonettes, with a single stairway and automatic vent

Section 5 Further guidance on lighting

There are two forms of lighting you should consider:

- Normal lighting: natural or artificial lighting normally used in your premises which may be needed to allow people to escape safely.

- Escape lighting: lighting that will function if the normal lighting fails. In most cases this must light automatically.

The primary purpose of the escape lighting is to illuminate escape routes but it also illuminates other safety equipment.

The size and type of your premises and the risk to the occupants will determine the complexity of escape lighting required. Borrowed lighting may be suitable in small premises where the light is from a dependable source, eg street lamps, and it will adequately illuminate escape routes. Where borrowed lighting is not suitable, then in exceptional cases, eg for small and simple premises with 24-hour staffing, a number of torches, in strategic positions, can be considered.

Single 'stand-alone' escape lighting units may be sufficient in small premises and these can sometimes be combined with exit or directional signs. The level of general illumination should not be significantly reduced by the sign.

A more comprehensive system of fixed automatic escape lighting is likely to be needed in larger, more complex premises, particularly in those with extensive basements or where there are significant numbers of staff or members of the public. Further information on emergency lighting can be found in BS5266-1 [Ref 27A].

You will have identified the escape routes when carrying out your fire risk assessment and need to ensure that they are all adequately lit. If there are escape routes that are not permanently illuminated, such as external stairs, then a switch, clearly marked 'Escape lighting', or some other means of switching on the lighting should be provided at the entry to that area/stairs.

An escape lighting system provided for escape purposes would normally cover the following:

- each exit door;

- escape routes;

- intersections of corridors;

- outside each final exit and on external escape routes;
- emergency escape signs;
- stairways so that each flight receives adequate light;
- changes in floor level;
- windowless rooms and toilet accommodation exceeding 8 m^2;
- fire-fighting equipment;
- fire alarm call points;
- equipment that would need to be shut down in an emergency;
- lifts;
- halls or other areas greater than 60 m^2.

It is not necessary to provide individual luminaires for each item above, but there should be a sufficient overall level of light to allow them to be visible and usable.

Escape lighting can be both 'maintained', ie on all the time, or 'non-maintained' which only operates when the normal lighting fails. Maintained lighting should be used in areas where people may be unfamiliar with the premises e.g. function rooms, bars etc. as well as hotel corridors where residents of such premises will be unfamiliar with the layout. Units are available with durations of between one and three hours. In practice, the three-hour units are the most popular and can help with maintaining limited continued use of your premises during a power failure (other than in an emergency situation).

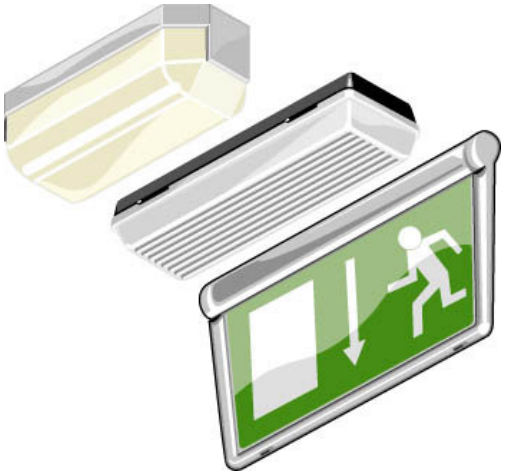


Figure 52 Luminaires

Escape lighting can be stand-alone dedicated units or incorporated into normal light fittings. There are highly decorative versions of these for those areas that demand aesthetically pleasing fixtures. Power supplies can be rechargeable batteries integral to each unit, a central battery bank or an automatic start generator.

To complement escape lighting, people, especially those unfamiliar with the premises, can be helped to identify exit routes by the use of way-guidance equipment. Way-guidance systems usually comprise photo-luminescent material, lines of LEDs, or strips of miniature incandescent lamps, forming a continuous marked escape route at lower level. These systems have proved particularly effective when people have had to escape through smoke, including for partially-sighted people.

If you decide that you need to install escape lighting or to modify your existing system, any work should be carried out by a competent person in accordance with the appropriate standards.

Figure 53 A 'way-guidance' system

5.1 Maintenance and testing of escape lighting

All escape lighting systems should be regularly tested and properly maintained to an appropriate standard. Most existing systems will need to be manually tested. However, some modern systems have self-testing facilities that reduce routine checks to a minimum.

Depending on your type of installation you should be able to carry out most of the routine tests yourself. The test method will vary. If you are not sure how to carry out these tests you should contact your supplier or other competent person.

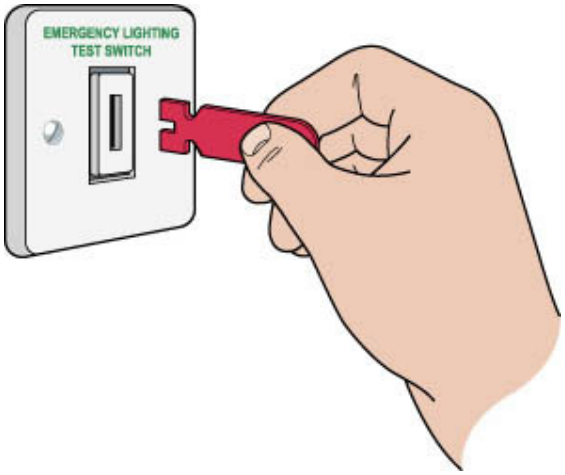


Figure 54 A test key

Test facilities often take the form of a 'fishtail' key inserted in a special switch either near the main fuse board or adjacent to relevant light switches.

Typically, testing would include:

- a daily visual check of any central controls;
- a monthly function test by operating the test facility for a period sufficient to ensure that each emergency lamp illuminates.
- an annual full discharge test

Particular care needs to be taken following a full discharge test. Batteries typically take 24 hours to re-charge and the premises should not be re-occupied until the emergency lighting system is fully functioning unless alternative arrangements have been made. See BS 5266-8[27] and BS 5266-1 [Ref 27A] for more information.

It is good practice to keep a record of such tests.

Section 6 Further guidance on signs and notices

6.1 Escape signs

In small and simple premises, a few signs indicating the alternative exit(s) might be all that is needed. In larger and more complex premises, a series of signs directing people along the escape routes towards the final exit might be needed.

A fire risk assessment (in other than very small premises) that determines no escape signs are required, as trained staff will always be available to help members of the public to escape routes, is unlikely to be acceptable to an enforcing authority.

Many people with poor vision retain some sight and are able to recognise changing or contrasting colour to provide them with visual clues when moving around a building.*It may be sufficient to paint any columns and walls in a contrasting colour (see BS 8300[14]) and to highlight changes in level by, for example, making the nosing to step and stair treads a contrasting colour.

For people with no sight, a well-managed 'buddy system', continuous handrails or a sound localisation system (which helps people to move towards an alert sound) or the installation of more tactile aids may be appropriate.

Exit signs should be clearly visible whenever the public, staff and contractors are present.

Positioning of escape route signs

The presence of other signs in premises (such as advertising and customer information), can distract attention from, or obscure the visibility of escape signs. This could affect people's ability to see and understand escape signs, particularly if there is a fire evacuation. Always ensure that escape signs are not overwhelmed.

Escape signs should meet the following criteria:

- They should provide clear, unambiguous instruction with enough information to enable people to safely leave a building in an emergency.
- Every escape route sign should, where necessary, incorporate, or be accompanied by, a directional arrow. Arrows should not be used on their own.
- If the escape route to the nearest exit is not obvious then it should be indicated by a

* The Royal National Institute of the Blind estimates that only about 4% of visually impaired people are totally blind.

sign(s).

- They should be positioned so that a person escaping will always have the next escape route sign in sight.
- Escape route and exit signs should be fixed above the door in the direction of escape and not be fixed to doors, as they will not be visible if the door is open.
- Signs mounted above doors should be at a height of between 2.0 m and 2.5 m above the floor.
- Signs on walls should be mounted between 1.7 m and 2.0 m above the floor.
- Mounting heights greater than 2.5 m may be used for hanging signs, e.g. in large open spaces or for operational reasons, but care should be taken to ensure that such signs are both conspicuous and legible. In such case larger signs may be necessary
- Signs should be sited at the same height throughout the escape route, so far as is reasonably practicable

Figure 55 BS-type Sign

Figure 56 Euro sign

Note: Either type will be acceptable but different types should not be mixed

Escape route sign design

The legibility of escape signs is determined by the size of the sign, its level of illumination and the distance over which it is viewed. The use of signs within the same premises should follow a consistent design pattern or scheme. You should not rely on a few outsized signs which may encourage people to travel to a particular escape route when other more appropriate routes should be used.

In multi-occupied premises, co-operation between the respective ‘responsible persons' including, if necessary, the managing agent or landlord should be sought to ensure that, as far as possible, all signs in the building conform to a single pattern or scheme.

Other safety signs and notices

A number of other mandatory signs such as 'Fire action' notices may also be necessary.

Fire doors that have been fitted with self-closing devices should be labelled 'Fire door - keep shut' on both sides. Fire resisting doors to cupboards, stores and service ducts that are not self-closing because they are routinely kept locked should be labelled 'Fire door - keep locked' on the outside. All signs should comply with BS 5499.[29]

Figure 57 'Fire door keep shut' notice

Signs should indicate non-automatic fire safety equipment if there is any doubt about its location, eg fire extinguishers that are kept in cabinets or in recesses.

A notice with the words 'Push bar to open' should be permanently displayed immediately above the push-bar on all doors fitted with a panic bolt or panic latch.

A notice with the words 'Fire escape – keep clear' should be permanently displayed at about eye level on the external face of all doors which are provided solely as a means of escape in case of fire and which, because they are not normally used, are liable to be obstructed.

Guest and resident notices

You should provide notices in case of fire. In small premises this may be an action list, in larger more complex premises this should be an action notice with plan indicating the escape routes, see figure 58a.

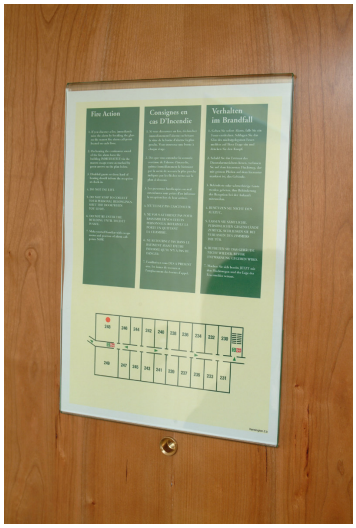


Figure 58a A typical bedroom fire action notice

Staff notices

In simple premises where there is a limited number of escape routes, it may be reasonable to issue only verbal reminders of what they need to do if there is a fire. In some premises, you could consider providing a short written statement that can be delivered with staff pay slips every six months.

In multi-occupied, larger and more complex premises or where there is a high turnover of staff, a more considered approach for staff notices and instructions will be necessary. As well as positioning the fire instructions notice on escape routes adjacent to fire break-glass call points, put them where staff frequently assemble in the premises, eg the canteen and locker rooms.

Figure 58 A typical fire action notice

If your premises are routinely expected to accommodate large numbers of people whose first language is not English you may need to consider providing instruction in more than one language. The interpretation should always convey an identical message.

Illumination

All signs and notices will need illumination to ensure they are conspicuous and legible. There are a number of options available to achieve this, such as:

- external illumination;
- internal illumination;

The supplier or other competent person can give you further advice.

Signs or notices of the photo-luminescent type, ie where the active material making up the luminous parts of such signs or notices needs a period of exposure to light before they become visible in darkness (but get fainter with time), should only be used where other forms of illumination are present.

Detailed guidance on the legibility, design and use of safety signs can be found in BS 5499-5[29] . Published guidance[5,6] on compliance with health and safety legislation on signs is also available. Photoluminescent Fire Safety Signs and Notices should conform to BS 5266-6 [Ref AV]. Certificate of conformance should be sought from the supplier.

Section 7 Further guidance on recording, planning, informing instructing and training

7.1 Fire safety records

Keeping up-to-date records of your fire risk assessment can help you effectively manage the fire strategy for your premises and demonstrate how you are complying with fire safety law.

Even if you do not have to record the fire risk assessment, it would be helpful to keep a record of any co-operation and exchange of information made between employers and other responsible people for future reference.

In larger and more complex premises, it is best to keep a dedicated record of all maintenance of fire-protection equipment and training. There is no one 'correct' format specified for this. Suitable record books are available from trade associations and may also be available from your local enforcing authority.

The quality of these records may also be regarded as a good indicator of the overall quality of the safety management structure.

Your records should be kept in a specified place on the premises (for example, in the management's office), and should include:

- a record of the building use, means of escape, fire-fighting equipment, fire alarms, and high risk areas;
- details of any significant findings from the fire risk assessment and any action taken (see Part 1 section 4.1);
- testing and checking of escape routes, including final exit locking mechanisms, such as panic devices, emergency exit devices and any electromagnetic devices;
- testing of fire-warning systems, including weekly alarm tests and periodic maintenance by a competent person;
- recording of false alarms;
- testing and maintenance of emergency lighting systems;
- testing and maintenance of fire extinguishers, hose reels and fire blankets etc;
- if appropriate, testing and maintenance of other fire-suppression systems;

- recording and training of relevant people and fire evacuation drills;
- planning, organising, policy and implementation, monitoring, audit and review;
- maintenance and audit of any systems that are provided to help the fire and rescue service;
- the arrangements in a large multi-occupied building for a co-ordinated emergency plan or overall control of the actions you or your staff should take if there is a fire.
- all alterations, tests, repairs and maintenance of fire safety systems, including passive systems such as fire doors;
- all “near miss” events and “lessons learned”, and any remedial action taken

Other issues that you may wish to record include:

- the competence, qualifications and status of the persons responsible for carrying out inspections and tests;
- the results of periodic safety audits, reviews, inspections and tests, and any remedial action taken;
- all incidents and circumstances which had the potential to cause accidents and monitor subsequent remedial actions;
- a record of the building use, the fire prevention and protection measures in place and high risk areas

You should ensure that no other management decisions or policies compromise safety.

Your documentation should be available for inspection by representatives of the fire and rescue authority.

More detailed recommendations are given in British Standard Fire Precautions in the design, construction and use of buildings BS5588-12 [Ref E].

Figure 59 is an example of how to record some individual stages of the process in more detail. In this example the form is also used as a tool to assess the risk of a fire starting and in

Step 3, the evaluation stage, for risk and hazard the assessor is asked to make a separate judgement for each, and describe the level of risk as 'High, Normal or Low'.

Figure 59

Step 1	Step 3.1 Evaluate risk and hazard		Step 3.3		Step 3.4.1 to 3.4.7
Sources of ignition and fuel	Risk - of ignition	Hazard – If a fire starts	Remove the risk	Reduce the risk	Fire safety measures provided to protect against residual risk
Hot lamps in display window	Normal	High - fire will spread to clothing material on display	Unable to remove	Ensure a clear distance of 1 m from lamps and display material	Staff trained to use appropriate fire extinguishers in the premises if safe to do so
Deep-fat fryer in kitchen/canteen - risk of ignition	Risk - High	Fire spread to ventilation duct and adjacent cupboards	Unable to remove	Clean fryer and the surround and extract clean regularly and ensure employees know how to use fryer and temperature control	Escape routes to final exit are within the suggested distance Provide a fire blanket and suitable fire-fighting equipment

Step 2	Step 3.2	Step 3.4		Step 3.4.1 to 3.4.7
Identify people at risk	Evaluate risks to people	Remove the risk	Reduce the risk	Fire safety measures provided to protect people from residual risk
No natural light in the rear of store	Staff unable to find exit door when working late if power fails Risk - High	Unable to remove risk	Unable to reduce risk	Provide emergency lighting on escape route.

Disabled people in premises	Access available for disabled in the parts of the premises only Risk - Low	N/A	Staff will be present in the premises at all times and will help disabled people to leave	Travel distance to final exit satisfactory at first floor Refuge available

In premises with 'engineered fire safety strategies', a fire policy manual should be provided in addition to any other records. Enforcing authorities would expect a fire engineering policy manual to conform to the structure set out in BS 7974-0 section 5: Reporting and presentation.[30]

Fire safety audit

A fire safety audit can be used alongside your fire risk assessment to identify what fire safety provisions exist in your premises.

When carrying out a review of your fire safety risk assessment, a pre-planned audit can quickly identify if there have been any significant changes which may affect the fire safety systems and highlight whether a full fire risk assessment is necessary.

Plans and specifications

Plans and specifications can be required to assist understanding of a fire risk assessment or emergency plan. Even where not needed for this purpose they can help you and your staff keep your fire risk assessment and emergency plan under review and help the fire and rescue service in the event of fire. Any symbols used should be shown on a key. Plans and specifications could include the following:

- essential structural features such as the layout of function rooms, escape doors, wall partitions, corridors, stairways etc (including any fire resisting structure and self closing fire doors provided to protect the route escape);
- location of refuges and lifts that have been designated suitable for use by mobility-impaired people;
- methods for fighting fire (details of the number, type and location of the fire-fighting equipment);
- location of manually-operated fire alarm call points and control equipment for fire alarms;

- location of any control rooms and any crowd safety steward's posts;
- location of any emergency lighting equipment and the exit route signs;
- location of any high-risk areas, equipment or process that must be immediately shut down by staff on hearing the fire alarm;
- location of any automatic fire-fighting systems, risers and sprinkler control valves;
- location of the main electrical supply switch, the main water shut-off valve and, where appropriate, the main gas or oil shut-off valves;
- plans and specifications relating to all recent constructions.

This information should be passed on to any later users or owners of the premises.

7.2 Planning

Emergency plan and contingency plans

The purpose of an emergency plan is to ensure that the people in your premises know what to do if there is a fire and that the premises can be safely evacuated.Your emergency plan should be appropriate to your premises. Items that could be included in your plan are given in Part 1 Section 4.2.

You should also prepare contingency plans to determine specific actions and/or the mobilisation of specialist resources.

7.3 Information, instruction, co-operation and co-ordination

Supplying information

You must provide easily understandable information to employees, the parents of children you may employ, and to employers of other persons working in your premises about the measures in place to ensure a safe escape from the building and how they will operate, for example:

- any significant risks to staff and other relevant persons that have been identified in your fire risk assessment or any similar assessment carried out by another user and responsible person in the building;

- the fire prevention and protection measures and procedures in your premises and where they impact on staff and other relevant persons in the building;
- the procedures for fighting a fire in the premises;
- the identity of people who have been nominated with specific responsibilities in the building.

You need to ensure that all staff and, where necessary, other relevant persons in the building, receive appropriate information in a way that can be easily understood. This might include any special instructions to particular people who have been allocated a specific task, such as shutting down equipment or the 'sweeping system' to guide members of the public to the nearest exit. This may also include residents and guests.

Duties of employees to give information

Employees also have a duty to take reasonable care for their own safety and that of other people who may be affected by their activities. This includes the need for them to inform their employer of any activity that they consider would present a serious and immediate danger to their own safety and that of others.

Dangerous substances

HSE publishes guidance[8] about specific substances where appropriate information may need to be provided. If any of these, or any other substance that is not included but nevertheless presents more than a slight risk, is present in premises, then you must provide such information to staff and others, specifically:

- the name of the substance and the risks associated with it, eg how to safely use or store the product to avoid creating highly flammable vapours or explosive atmospheres;
- any legislative provisions that may be associated with the substance;
- you must allow employees access to the hazardous substances safety data sheet;

inform the local fire and rescue service where dangerous substances are present on the premises.

Case study

A few boxes of sodium chlorate-based weedkiller, or a few litres of flammable varnish, are unlikely to need anything other than basic precautions such as a warning sign on the room or container in which they are stored. However, the storage and/or use of sizeable quantities

highly flammable liquids will require more comprehensive information and notification to the fire and rescue service.

Information to the fire and rescue services

In addition to providing information to the fire and rescue service when dangerous substances are present in sufficient quantities to pose an enhanced risk, it is not possible to reduce it enough, then the responsible person must communicate their findings to the emergency services to enable will also be helpful to inform them of any short term changes that might have an impact on their fire-fighting activities; e.g. in the event of temporary loss of a fire-fighting facility and temporary alterations.

Procedures should also include meeting and briefing the fire and rescue service when they arrive.

Case study

If the fire-fighting lift in a multi-storey premises becomes defective, this must also be brought to the attention of the fire and rescue service. Being unable to use this facility to tackle a fire on the upper floors might have a serious effect on the ability of fire-fighters to begin operations as quickly as planned. The information supplied will enable the emergency services to make adjustments to the level of the emergency response.

Instruction

You will need to carefully consider the type of instructions to staff and other people in your premises. Written instructions must be concise, comprehensible and relevant and therefore must be reviewed and updated as new working practices and hazardous substances are introduced.

Inclusive access and employment policies mean that people with learning difficulties may now be present in a range of premises and your fire risk assessment should consider whether further instruction or guidance is necessary to ensure that your evacuation strategy is appropriate and understood by everyone.

Instructions will need to be given to people delegated to carry out particular tasks, for example:

- ensure that escape routes are accessible;
- daily, weekly, quarterly and yearly checks on the range of fire safety measures (in larger premises some of the work may be contracted out to a specialist company);
- safety considerations when closing down the premises at the end of the day, eg removing rubbish, ensuring enough exits are available for people that remain and closing fire doors;
- leaving hazardous substances in a safe condition when evacuating the building;
- the safe storage of hazardous substances at the end of the working day;
- ensuring everyone in large organisations with many buildings within a curtilage and a security zone know how to use internal emergency telephones.

Specific responsibilities that must be carried out on hearing the fire alarm are:

- how staff will help members of the public/visitors to leave the building;
- 'sweeping' of the premises floor by staff to guide people to the nearest exit when the fire alarm sounds;
- calling the emergency services;
- carrying out evacuation roll calls;
- taking charge at the assembly area;
- meeting and directing fire engines;
- cover arrangements when nominated people are on leave.

Co-operation and co-ordination

Where you share premises with others (this includes people who are self-employed or in partnership), each responsible person, ie each employer, owner or other person who has control over any part of the premises, will need to co-operate and co-ordinate the findings of their separate fire risk assessments to ensure the fire precautions and protection measures are effective throughout the building. This could include:

- co-ordinating an emergency plan (see Step 4.2 for features of an emergency plan);
- identifying the nature of any risks and how they may affect others in or about the premises;

- identifying any fire-prevention and protection measures;
- identifying any measures to mitigate the effects of a fire;
- arranging any contacts with external emergency services and calling the fire brigade.

7.4 Fire safety training

Staff training

The actions of staff if there is a fire are likely to be crucial to their safety and that of other people in the premises. All staff should receive basic fire safety induction training and attend refresher sessions at pre-determined intervals.

You should ensure that all staff and contractors are told about the emergency plan and are shown the escape routes.

The training should take account of the findings of the fire risk assessment and be easily understood by all those attending. It should include the role that those members of staff will be expected to carry out if a fire occurs. This may vary in large premises, with some staff being appointed as fire marshals or being given some other particular role for which additional training will be required.

In addition to the guidance given in Part 1 Step 4.4. as a minimum all staff should receive instruction on:

- the importance of fire doors and other basic fire-prevention measures;
- where relevant, the appropriate use of fire-fighting equipment;
- the importance of reporting to the assembly area;
- exit routes and the operation of exit devices, including physically walking these routes;
- general matters such as permitted smoking areas or restrictions on cooking other than in designated areas.
- assisting disabled persons where necessary

Training is necessary:

- when staff start employment or are transferred into the premises;

- when changes have been made to the emergency plan and the preventive and protective measures;
- where working practices and processes or people's responsibilities change;
- to take account of any changed risks to the safety of staff;
- to ensure that staff know what they have to do to safeguard themselves and others on the premises.
- where staff are expected to assist disabled persons;
- if the member of staff may take on the role of "duty manager"
- . where staff are expected to assist disabled persons;

Training should be repeated as often as necessary and should take place during working hours.

Whatever training you decide is necessary to support your fire safety strategy and emergency plan, it should be verifiable and supported by management.

Enforcing authorities may want to examine records as evidence that adequate training has been given.

Fire marshals and fire-fighting team

Staff expected to undertake the role of fire marshals (often called fire wardens) or form members of a fire-fighting team (if you have one), would require more comprehensive training. Their role may include:

- helping those on the premises to leave;
- checking the premises to ensure everyone has left;
- using fire-fighting equipment if safe to do so;
- liaising with the fire and rescue service on arrival;
- shutting down vital or dangerous equipment; and
- performing a supervisory/managing role in any fire situation.

Training for this role may include:

- detailed knowledge of the fire safety strategy of the premises;

- awareness of human behaviour in fires;
- how to encourage others to use the most appropriate escape route;
- how to search safely and recognise areas that are unsafe to enter;
- the difficulties that some people, particularly if disabled, may have in escaping and any special evacuation arrangements that have been pre-planned;
- additional training in the use of fire-fighting equipment;
- an understanding of the purpose of any fixed fire-fighting equipment such as sprinklers or gas flooding systems;
- reporting of faults, incidents and near misses.

Fire drills

Once the emergency plan has been developed and training given, you will need to evaluate its effectiveness. The best way to do this is to perform a fire drill. This should be carried out at least annually or as determined by your fire risk assessment. If you have a high staff turnover, you may need to carry them out more often.

A well-planned and executed fire drill will confirm understanding of the training and provide helpful information for future training, such as time required to waken people. The responsible person should determine the possible objectives of the drill such as to:

- identify any weaknesses in the evacuation strategy;
- test the procedure following any recent alteration or changes to working practices;
- familiarise new members of staff with procedures;
- test the arrangements for disabled people.

Who should take part?

Within each building the evacuation should be for all occupants except those who may need to ensure the security of the premises, or people who, on a risk-assessed basis, are required to remain with particular equipment or processes that cannot be closed down.

Premises that consist of several buildings on the same site should be dealt with one building at a time over an appropriate period unless the emergency procedure dictates otherwise.

Carrying out the drill

In simple premises, eg small bed and breakfasts and small hostels, it maybe sufficient to sound the fire alarm.

In larger premises, that have more than one escape route, the escape plan should be designed to evacuate all people on the assumption that one exit or stairway is unavailable because of the fire. This could be simulated by a designated person being located at a suitable point on an exit route. Applying this scenario to different escape routes at each fire drill will encourage individuals to use alternative escape routes which they may not normally use.

When carrying out the drill you might find it helpful to:

- circulate details concerning the drill and inform all people of their duty to participate. It may not be beneficial to have 'surprise drills' as the health and safety risks introduced may outweigh the benefits;
- ensure that equipment can be safely left;
- nominate observers;
- inform the receiving company if the fire-warning system is monitored. (If the fire and rescue service is normally called directly from your premises, ensure that this does not happen);
- inform members of the public if they are present;
- ask a member of staff at random to set off the alarm by operating the nearest alarm call point using the test key. This will indicate the level of knowledge regarding the location of the nearest call point.

More detailed information on fire drills and test evacuations are given in BS5588-12 [Ref E] .

The roll call

Where possible carry out a roll call of your staff as soon as possible at the designated assembly point(s), and /or receive reports from wardens designated to 'sweep' the premises. You should note any people who are unaccounted for. In a real evacuation this information will need to be passed to the fire and rescue service on arrival.

Check that people have assembled at the evacuation point and that the emergency services

are met at the rendezvous point.

Once the roll call is complete, allow people to return to the building. If the fire-warning system is monitored inform the receiving station that the drill has now been completed and record the outcomes of the drill.

Monitoring and debrief

Throughout the drill the responsible person and nominated observers should pay particular attention to:

- communication difficulties with regard to the roll call and establishing that everyone is accounted for;
- the use of the nearest available escape routes as opposed to common circulation routes;
- difficulties with the opening of final exit doors;
- difficulties experienced by people with disabilities;
- the roles of specified people, eg fire wardens;
- inappropriate actions, eg stopping to collect personal items, attempting to use lifts etc;
- windows and doors not being closed as people leave.

On-the-spot debriefs are useful to discuss the fire drill, encouraging feedback from everybody. Later, reports from fire wardens and observations from people should be collated and reviewed. Any conclusions and remedial actions should be recorded and implemented.

Section 8 Quality assurance of fire protection equipment and installation

Fire protection products and related services should be fit for their purpose and properly installed and maintained in accordance with the manufacturer's instructions or the relevant British Standard.

Third-party certification schemes for fire protection products and related services are an effective means of providing the fullest possible assurances, offering a level of quality, reliability and safety that non-certificated products may lack. This does not mean goods and services that are not third-party approved are less reliable, but there is no obvious way in which this can be demonstrated.

Third-party quality assurance can offer great comfort to you, both as a means of satisfying you that goods and services you have purchased are fit for purpose, and as a means of demonstrating that you have complied with the law.

Your local fire and rescue service, fire trade associations or your own trade association may be able to provide further details about third-party quality assurance schemes and the various organisations that administer them.

Appendix A

A.1 Example fire safety maintenance checklist

As a means of supporting your fire safety policy, this example fire safety maintenance checklist can be used for premises that do not have complex fire safety measures (see Part 1, Step 3.4.6). The list is not intended to be comprehensive and should not be used as a substitute for carrying out a fire risk assessment.

You will need to incorporate into this example the recommendations of manufacturers and installers of the fire safety equipment/systems that you may have installed in your premises.

Any ticks in the grey boxes should result in further investigation and appropriate action as necessary. In larger and more complex premises you may need to seek the assistance of a competent person to carry out some of the checks.

	Yes	No	N/A	Comments
Daily tests and checks (not normally recorded)				
Escape routes				
Can all fire exits be opened immediately and easily?	□	□	□	
Are fire doors unobstructed ?				
Are escape routes clear?	□	□	□	
Fire warning systems				
Is the indicator panel showing 'normal'?	□	□	□	
Escape lighting				
Are luminaires and exit signs in good condition and undamaged?	□	□	□	
Is emergency lighting and sign lighting working correctly ?	□	□	□	
Fire-fighting equipment				

Are all fire extinguishers in place?	☐	☐	☐	
Are fire extinguishers clearly visible?	☐	☐	☐	
Are vehicles blocking fire hydrants and access?	☐	☐	☐	

Weekly checks				
Escape routes				
Do all emergency fastening devices to fire exits (push bars and pads etc) work correctly?	☐	☐	☐	
Are external routes clear and safe?	☐	☐	☐	
Fire warning systems				
Does testing a manual call point send a signal to the indicator panel? Disconnect the link to the receiving centre or tell them you are doing a test)	☐	☐	☐	
Did the alarm system work correctly?	☐	☐	☐	
Did staff and other people hear the Fire alarm?	☐	☐	☐	
Did any linked fire protection systems operate correctly? (eg magnetic door holder released, smoke curtains drop)	☐	☐	☐	
Do all visual alarms and/or vibrating alarms and pagers, as applicable work?	☐	☐	☐	
Do voice alarm systems work correctly? Was the message Understood?	☐	☐	☐	
Escape lighting				
Are charging indicators (if fitted) visible?	☐	☐	☐	
Does generator start correctly?	☐	☐	☐	
Fire-fighting equipment				
Is all equipment in good condition?	☐	☐	☐	

Additional items from 'manufacturer's recommendations	◻	◻	◻	

Monthly checks				
General				
Have all emergency generators been tested? (Normally run for one hour)	◻	◻	◻	
Escape routes				
Do all electronic release mechanisms on escape doors work correctly? Do they 'fail safe' in the open position?	◻	◻	◻	
Do all automatic opening doors on escape routes 'fail safe' in the open position?	◻	◻	◻	
Are fire door seals and self closing devices in good condition ?				
Do all roller shutters provided for fire compartmentation work correctly?	◻	◻	◻	
Are external escape stairs safe?	◻	◻	◻	
Do all internal self-closing fire doors work correctly?	◻	◻	◻	
Escape lighting				
Do all luminaires and exit signs function correctly when tested?	◻	◻	◻	
Fire-fighting equipment				
Is the pressure in 'stored pressure' fire extinguishers correct?	◻	◻	◻	
Additional items from manufacturer's recommendations	◻	◻	◻	

Three-monthly checks				
General				
Are emergency water tanks, ponds at their normal capacity?	◻	◻	◻	

Are vehicles blocking fire hydrants And access?	◻	◻	◻	
Additional items from 'manufacturer's recommendations	◻	◻	◻	
Six-monthly checks				
General				
Has any fire-fighting or emergency evacuation lift been tested by a competent person?	◻	◻	◻	
Has any sprinkler system been tested by a competent person?	◻	◻	◻	
Have the release and closing mechanisms of any fire-resisting compartment doors and shutters been tested?	◻	◻	◻	
Fire warning system				
Has the system been checked by a competent person?	◻	◻	◻	
Escape lighting				
Do all luminaires operate on test for one third of their rated value?	◻	◻	◻	
Additional items from 'manufacturer's recommendations				

Annual checks				
Escape routes				
Do all self-closing fire doors fit correctly?	◻	◻	◻	
Is escape route compartmentation in good repair ?				
Escape lighting				
Do all luminaires operate on test for their full rated duration?	◻	◻	◻	
Has the system been thoroughly checked by a competent person?				
Fire-fighting equipment				
Has all fire-fighting equipment been checked by a competent	◻	◻	◻	

person?				
Miscellaneous				
Has the dry/wet rising fire main been tested?	□	□	□	
Has the smoke and heat ventilation system been tested satisfactorily ?				
Has external access for the fire and rescue service been checked?	□	□	□	
Have fire-fighters' switches been tested?	□	□	□	
Has the fire hydrant bypass flow valve control been tested?	□	□	□	
Are fire engine direction signs in place?	□	□	□	

A.2 Example pro-forma record of significant findings

Premises name ……..

Address ……

No of persons employed……

Activity……

Assessment carried out- date……

Assessment carried out- assessor……..

Signature……

Assessment review

Assessor …… Date……
Signature…… Print name……

Assessor …… Date……
Signature…… Print name……

Assessor …… Date……
Signature…… Print name……

Assessor …… Date……
Signature…… Print name……

Fire hazards identified	Actions taken to remove or reduce the risk of a fire occurring	People who are at risk	Actions taken to reduce the risk from the spread of fire	Actions people need to take in case of fire	Train, inform, instruct and co-ordinate

Appendix B Technical information on fire resisting separation, fire doors and door fastenings

B1 Fire-resisting separation

General

The materials from which your premises are constructed may determine the speed with which a fire may spread, affecting the escape routes that people will use. A fire starting in a building constructed mainly from readily combustible material will spread faster than one where modern fire-resisting construction materials have been used. Where non-combustible materials are used and the internal partitions are made from fire-resisting materials, the fire will be contained for a longer period, allowing more time for the occupants to escape.

Because of the requirements of the Building Regulations you will probably already have some walls and floors that are fire resisting and limitations on the surface finishes to certain walls and ceilings.

You will need to consider whether the standard of fire resistance and surface finishing in the escape routes is satisfactory, has been affected by wear and tear or alterations and whether any improvements are necessary.

The following paragraphs give basic information on how fire-resisting construction can provide up to 30 minutes protection to escape routes. This is the standard recommended for most situations. If you are still unsure of the level of fire resistance which is necessary after reading this information, you should consult a fire safety expert.

Fire-resisting construction

The fire resistance of a wall or floor is dependent on the quality of construction and materials used. Common examples of types of construction that provide 30-minute fire resistance to escape routes if constructed to the above standards are:

- internal framed construction wall, non-load bearing, consisting of 72 mm x 37 mm timber studs at 600 mm centres and faced with 12.5 mm of plasterboard with all joints taped and filled;

- internal framed construction, non-load bearing, consisting of channel section steel studs at 600 mm centres faced with 12.5 mm of plasterboard with all joints taped and filled;

- masonry cavity wall consisting of solid bricks of clay, brick earth, shale, concrete or calcium silicate, with a minimum thickness of 90 mm on each leaf.

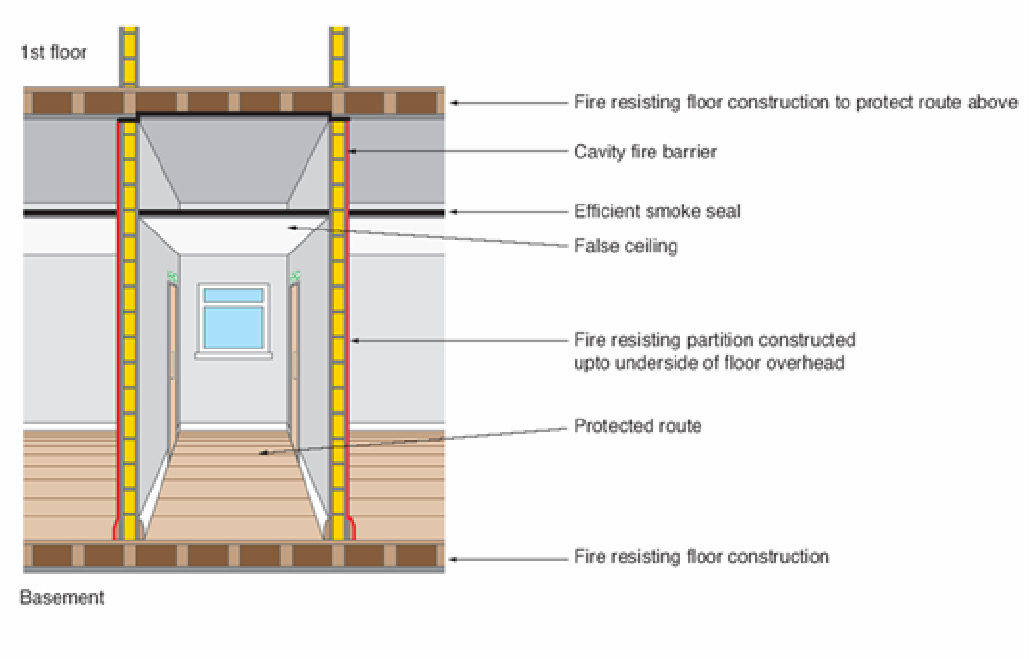


Figure 60 Fire-resisting construction

There are other methods and products available which will achieve the required standard of fire resistance and may be more appropriate for the existing construction in your large places of assembly. If there is any doubt about how your building is constructed, then ask for further advice from a competent person.

Fire-resisting floors

The fire resistance of floors will depend on the existing floor construction as well as the type of ceiling finish beneath. If you need to upgrade the fire resistance of your floor it may not be desirable to apply additional fire resistance to the underside of an existing ornate ceiling. In older buildings there may be a requirement to provide fire resistance between beams and joists.

A typical example of a 30-minute fire-resisting timber floor is tongue and groove softwood of not less than 15 mm finished thickness on 37 mm timber joists, with a ceiling below of one layer of plasterboard to a thickness of 12.5 mm with joints taped and filled and backed by supporting timber.

There are other, equally valid, methods and products available for upgrading floors. If you are in any doubt you should ask the advice of a competent person and ensure that the product is installed in accordance with instructions from the manufacturer or supplier.

Fire-resisting glazing

The most common type of fire-resisting glazing is 6 mm Georgian wired glazing, which is easily identifiable. Clear fire-resisting glazing is available and can quickly be identified by a mark etched into the glass, usually in the corner of the glazed panel, to confirm its fire-resisting standard. Although this is not compulsory, the marking of glass is supported by the Glass and Glazing Federation, you should check whether the glazing will be marked accordingly before purchase. The glazing should have been installed in accordance with the manufacturer's instructions and to the appropriate standard [Ref AD], to ensure that its fire-resisting properties are maintained.

The performance of glazed systems in terms of fire resistance and external fire exposure should, wherever possible, be confirmed by test evidence. Alternatively, where there is a lack of test information, ask for an assessment of the proposed construction from suitably qualified people.

Fire separation of voids

A common problem encountered with fire separation is fire-resisting partitions which do not extend above false ceilings to true ceiling height. This may result in unseen fire spread and a loss of vital protection to the escape routes. It is important therefore to carefully check all such partitions have been installed correctly.

Breaching fire separation

To ensure effective protection against fire, walls and floors providing fire separation must form a complete barrier, with an equivalent level of fire resistance provided to any openings such as doors, ventilation ducts, pipe passages or refuse chutes.

The passing of services such as heating pipes or electrical cables through fire-resisting partitions leaves gaps through which fire and smoke may spread. This should be rectified by suitable fire stopping and there are many proprietary products available to suit particular types of construction. Such products should be installed by competent contractors.

Décor and surface finishes of walls, ceilings and escape routes

The materials used to line walls and ceilings can contribute significantly to the spread of flame across their surface. Most materials that are used as surface linings will fall into one of three

classes of surface spread of flame. The following are common examples of acceptable materials for various situations:

Class 0: Materials suitable for circulation spaces and escape routes

- Such materials include brickwork, blockwork, concrete, ceramic tiles, plaster finishes (including rendering on wood or metal lathes), wood-wool cement slabs and mineral fibre tiles or sheets with cement or resin binding.

Note: Additional finishes to these surfaces may be detrimental to the fire performance of the surface and if there is any doubt about this then consult the manufacturer of the finish.

Class 1: Materials suitable for use in all rooms but not on escape routes

- Such materials include all the Class 0 materials referred to above. Additionally, timber, hardboard, blockboard, particle board, heavy flock wallpapers and thermosetting plastics will be suitable if flame-retardant treated to achieve a Class 1 standard.

Class 3: Materials suitable for use in rooms of less than 30 m^2

- Such materials include all those referred to in Class 1, including those that have not been flame-retardant treated and certain dense timber or plywood and standard glass-reinforced polyesters.

The equivalent European classification standard will also be acceptable. Further details about internal linings and classifications are available in Approved Document B[24] . Appropriate testing procedures are detailed in BS 476-7[32] and where appropriate BS EN 13501-1.[33]

Further guidance on types of fire-resisting construction has been published by the Building Research Establishment.[34]

B2 Fire resisting doors

Requirements of a fire resisting door

Effective fire resisting doors are vital to ensure that the occupants can evacuate to a place of safety. Correctly specified and well-fitted doors will hold back fire and smoke preventing escape routes becoming unusable, as well as preventing the fire spreading from one area to another.

Fire resisting doors are necessary in any doorway located in a fire-resisting structure. Most

internal doors are constructed of timber. These will give some limited protection against fire spread, but only a purpose-built fire resisting door that has been tested to an approved standard will provide the necessary protection. Metal fire resisting doors are also available and specific guidance for these follows.

All fire resisting doors are rated by their performance when tested to an appropriate standard. The level of protection provided by the door is measured, primarily by determining the time taken for a fire to breach the integrity (E), of the door assembly, together with its resistance to the passage of hot gases and flame.

It may be possible to upgrade the fire resistance of existing doors. Further information is available from BRE [Ref AE] or TRADA [Ref AF].

Timber fire resisting doors require a gap of 2-4 mm between the door leaf and the frame. However larger gaps may be necessary to ensure that the door closes flush into its frame when smoke seals are fitted – BS 4787-1 [Ref AG]. For fire resisting purposes the gap is normally protected by installing an intumescent seal, in either the door or, preferably, the frame. The intumescent seal expands in the early stages of a fire and enhances the protection given by the door. Additional smoke seals, either incorporated in the intumescent seal or fitted separately, will restrict the spread of smoke at ambient temperatures. Doors fitted with smoke seals have their classification code suffixed with an 'S'.

The principal fire resisting door categories are:

- E20 fire resisting door providing 20 minutes fire resistance (or equivalent FD 20S) (Note: Many suppliers no longer provide an E 20 type fire resisting door).
- E30 fire resisting door providing 30 minutes fire resistance (or equivalent FD 30S).
- E60 fire resisting door providing 60 minutes fire resistance (or equivalent FD 60S).

Timber fire resisting doors are available that will provide up to 120 minutes fire resistance but their use is limited to more specialised conditions which are beyond the scope of this guidance.

Metal fire resisting doors

Although the majority of fire resisting doors are made from timber, metal fire resisting doors, which meet the appropriate Standard, can often be used for the same purpose. However, there are situations, especially in large retail premises, where they are more appropriate. The majority of metal fire resisting door manufacturers will require the use of bespoke frames and hardware for their door sets.

See BS EN 1634-1[35] and BS 476-22[36] for more information.

For detailed guidance refer to Approved Document B.[24]

Glazing in fire resisting doors

Although glazing provides additional safety in everyday use and can enhance the appearance of fire resisting doors, it should never reduce the fire resistance of the door. The opening provided in the door for the fire-resisting glazing unit(s), fitted in a proven intumescent glazing system and the fitting of the beading are critical, and should only be entrusted to a competent person. In all cases the door and glazing should be purchased from a reputable supplier who can provide documentary evidence that the door continues to achieve the required rating.

Fire resisting door furniture

Single axis hinges

To ensure compliance with their rated fire performance, fire resisting doors must be hung with the correct number, size and quality of hinges. Normally a minimum of three hinges is required, however the manufacturer's instructions should be closely followed. BS EN 1935[37] including Annex B, is the appropriate Standard.

Rising butt hinges are deprecated and should not be accepted due to their inability to close and latch the door from any angle

Alternative door mountings

Although the most common method of hanging a door is to use single axis hinges, alternative methods are employed where the door is required to be double swing or mounted on pivots for other reasons.

Floor mounted controlled door closing devices are the most common method regularly found with timber, glass and steel doors while transom mounted devices are commonly used with aluminium sections. In each case reference should be made to the fire test report for details as to compliance with the composition of the door assembly including the door mounting conditions.

Self-closing devices

All fire resisting doors, other than those to locked cupboards and service ducts should be fitted with an appropriately controlled self-closing device that will effectively close the door from any angle. In certain circumstances, concealed, jamb-mounted closing devices may be specified and in these cases should be capable of closing the door from any angle and against any latch fitted to the door; spring hinges are unlikely to be suitable. All self-closing devices should comply with BS EN 1154[38]

Electrically operated hold-open devices

In some situations, such as corridors used by large numbers of people or when mobility-impaired people may have difficulty in opening fire resisting doors, electrically-operated devices that hold the fire resisting door open until it is until it is released allowing the controlled door closing device to resume its function, may be fitted..

Typical examples of such devices include:

- Electro-magnetic devices fitted to the fire resisting door which release when the fire alarm operates.
- Electro-magnetic devices within the controlled door closing device.
- 'Free swing' controlled door closing devices, which operate by allowing the door leaf to work independently of the closing device in normal conditions. An electro-magnetic device within the spring mechanism linked to the fire alarm system ensures that the door closes on the operation of the fire alarm.

WARNING: Free-swing controlled door closing devices must not be fitted to cross-corridor doors.

Other devices which perform the same function are available and may be acceptable.

With these systems the device is activated either by an electrical fire alarm system incorporating automatic smoke detectors or by independent smoke detectors (not domestic smoke alarms) on each side of the door, installed solely for that purpose.

In all cases the fire resisting door should close when the fire alarm is operated or if there is a power failure. Where such devices are used it should be possible to close the door manually. These devices should only be fitted if shown to be acceptable as part of your fire risk assessment (eg door swings on an even floor, no risk of the door being obstructed, etc). Ask the advice of a fire safety expert before hold-open devices are installed.

Such devices should, fully comply with BS EN 1155 [Ref AS] or BS5839-3.[40]

Door coordinators

Where pairs of doors with rebated meeting stiles are installed it is critical that the correct closing order is maintained. Door coordinators to BS EN 1158 [Ref AT] should be fitted and fully operational in all cases where the doors are self-closing.

Installation and workmanship

The reliability and performance of correctly specified fire resisting doors can be undermined by inadequate installation. It is important that installers with the necessary level of skill and knowledge are used. Accreditation schemes for installers of fire resisting doors are available.

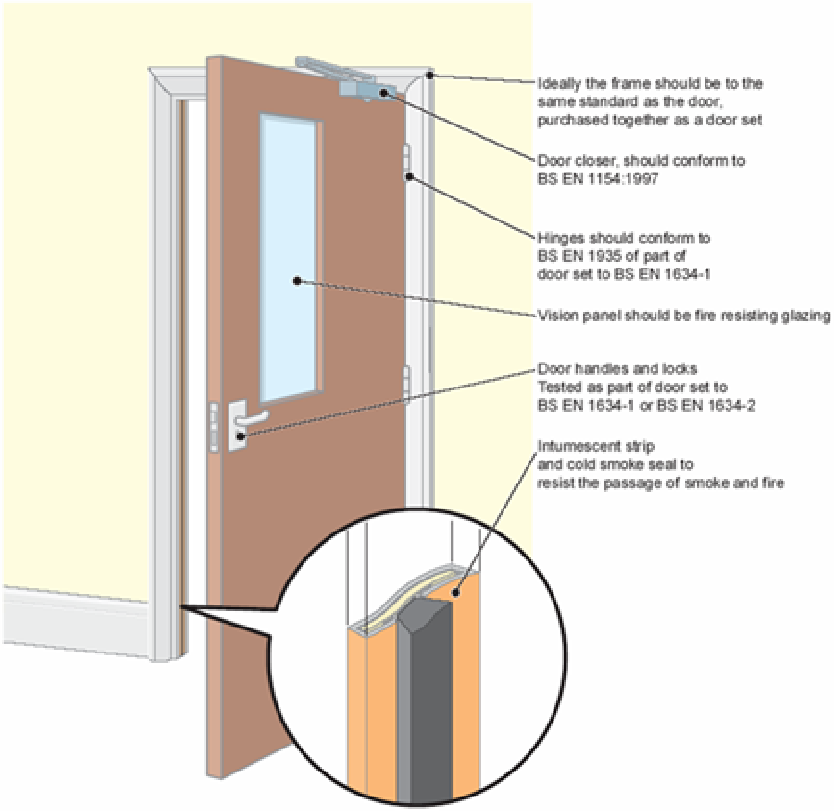


Figure 61 A fire-resisting and smoke stopping door

Fire resisting doors and shutters will require routine maintenance, particularly to power operation and release and closing mechanisms.

Further information is available on fire resisting doors in BS 8214.[41] If you are unsure about the quality, the effectiveness or the fitting of your fire resisting doors consult a fire safety expert.

B3 Door-fastening devices

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, will not be acceptable.

Guidance on fire exits starts from the position that doors on escape routes should not be fitted with any locking devices (electrically operated or otherwise). However, it is accepted that in many cases the need for security will require some form of device that prevents unlimited access but still enables the occupants of a building or area to open the door easily if there is a fire. These devices can take many forms but, in the majority of cases, premises where there are members of the public present or others who are not familiar with the building should use panic exit bar devices conforming to BS EN 1125,[42] ie push bars. (i.e. push bars or touch bars)

Premises that have limited numbers of employees or others who are familiar with the building and where panic is not likely may use devices conforming to BS EN 179,[43] ie push pads or lever handles.

In some larger premises, when only staff are on the premises and there is a security issue, it may be acceptable to restrict the number of emergency exits immediately available. For example, when only security staff are present at night in large premises, or prior to opening a premises to the public in the morning. Staff should be made fully aware of any restrictions and the number of exits not immediately available should be limited.

Electrical locking devices

Electrically operated entry control devices have been developed for use as locking devices on fire exits. They fall into two main categories, electronmechanical and electromagnetic.

- Electromechanical devices

  Electromechnical 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. These devices have been fitted in many premises and may be linked to the fire-detection and/or warning system. Experience has shown that these devices can fail to open in a number of ways. They are dependent on a spring mechanism to return the lock keep or draw bolt(s) and are liable to jam when pressure is applied to the door. It is also relatively easy to fit them incorrectly. Electromechanical locking devices are normally unacceptable 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 that they do not rely on a spring mechanism, fail-safe open and are not affected by pressure, in which case the criteria for electromagnetic devices must be adhered to.

- Electromagnetic devices

  These devices comprise of a magnet and a simple fixed retaining plate with no moving parts and are therefore generally considered to be more reliable due to their inherent 'fail-safe unlocked' operation. Electromagnetic locking devices go some way to addressing the particular concerns surrounding electromechanical locking systems. The release of this type of device is controlled by the interruption of electrical current to an electromagnet either manually via a switch or other means, break-glass point (typically coloured green), or by linking to the fire-warning and/or 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 five and sixty 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 maybe acceptable for use by staff that are familiar with their operation and are suitably trained in their use.

Management of electronic door-control devices including time delays

The use of such devices 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:

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

- In public areas, when push bars are operated on escape doors, they should release the electromagnetic locks immediately and allow the exit doors to open.

- The requirement for exit control should be carefully assessed and should not be seen as a substitute for good management of the employees and occupants.
- All other alternatives should have been explored/evaluated prior to using these devices to ensure they do not affect the safety of occupants?
- The device should be connected to the fire warning and/or detection system
- The device should have dual function ie does it incorporate a by pass circuit for immediate release on activation of the fire warning and/or detection system
- Each door should be fitted with a single securing device
- The emergency exit doors should be clearly labelled to their operation under normal conditions
- The requirement for exit control should be carefully assessed and should not be seen as a substitute for good management of the employees and occupants
- Adequate control measures should be put in place to ensure the safety of the occupants?

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.

The use of exit control devices should not be considered where the number of trained personnel is low and members of the public would be expected to operate the devices without help. Their use in places of assembly should not be considered without the highest degree of supervision and controls.

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.[16] There should be an additional means of manually overriding the locking device at each such exit (typically a green break-glass point).

The use of time-delay systems that prevent the opening of emergency exits for a pre-set time are primarily used to improve security. These add a further layer of complexity to the fire strategy and should not be considered in public areas. They should only be used in non-public areas when all other options such as relocating valuable stock or exterior boundary management have been addressed. Their value in preventing theft is likely to be transient as the use of the manual override becomes more widely known.

British Standard 8220[44] 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.

For further guidance on the selection and maintenance of door furniture suitable for use on timber fire resisting and escape doors refer to BHIF Code of practice – Hardware for Timber fire and escape doors[Ref AU].

Appendix C Historic buildings

General considerations

This appendix offers additional information about listed and historical buildings.

Fire risk assessments conducted for sleeping accommodation which is within a listed or historic building will need to ensure that a balance is struck between ensuring sufficient fire safety measures are in place for the safety of people, yet avoid extensive alterations and helping to maintain the character of the building.

As well as the fire risk assessment it is recommended that a general fire policy statement and manual is compiled. A person must be nominated to take responsibility for all aspects of fire safety. Usually the person charged with the management and control of the premises will be the 'responsible person' under the Regulatory Reform (Fire Safety) Order 2005.[1]

The advice and/or consent of a building control body or any other relevant bodies (e.g. English Heritage) should form part of any fire risk assessment that impacts on the character of the building (eg replacement of doors, fittings, wooden panelling and décor) or material changes to existing escape routes. An ideal solution is one that is reversible, enabling the historic elements to be reinstated.

A fire safety advisor will be able to suggest alternatives to conventional fire precautions, such as:

- a fire engineering solution;
- upgrading existing doors and partitions in a sympathetic manner to improve their fire resistance;
- considering the installation of specialist fire-detection or suppression systems.

Should the design and nature of the historic building preclude the introduction of conventional fire safety features, it will be necessary to manage the building in such a way that:

- limits the number of occupants, either staff or members of the public, inside the building;
- limits activities in the building; and
- provides adequate supervision within the building.

Buildings that open to the public may wish to designate parts as 'off limits' to the general

public. The locking of internal doors or the use of fixed or movable barriers should not restrict alternative escape routes being made available.

Liaison with the fire and rescue service

The responsible person will need to ensure effective liaison with the fire and rescue service to enable them to carry out fire-fighting operations. These may include information on:

- the provision of water supplies, seasonal ponds, lakes and underground tanks, and any associated pumps;
- difficult access for fire engines;
- particular hazards in the construction features of the building (including asbestos);
- the use of combustible under floor insulation;
- underground vaults ducts and voids where fire may spread unchecked;
- worn stone slabs in stairway construction; and
- the presence of cast iron columns and wrought iron beams.

Emergency planning

An important consideration for the owners and trustees is the protection of valuable artefacts and paintings from the effects of fire. However, the efficient evacuation of all occupants must take precedence over procedures for limiting damage to property and contents. Salvage work should be limited to those parts of the building not directly affected by the fire.

Fire wardens tasked with carrying out salvage work should have received formal training, adequate protection and be fully briefed about the health and safety risk assessment carried out to identify the dangers associated with this activity. Further detailed advice on fire safety in historic buildings can found in the following publications:

- BS 7913: 1988 The principles of the conservation of historic buildings
- Heritage under fire – A guide to the protection of historic buildings published by the FPA for the UK Working Party on Fire Safety in Historic Buildings ISBN 0 90216790-1
- Tan 14, The installation of sprinkler systems in historic buildings. ISBN 1 9001 68 63 4
- Tan 11, Fire protection measures in Scottish historic buildings ISBN 1 900168 41 3

- Tan 22 Fire risk management in heritage buildings ISBN 1 900168 71 5
- Summary and conclusions of the report into fire protection measures for the Royal Palaces by Sir Alan Bailey. Following the Windsor Castle fire 1992
- The fire at Upton Park published by the National Trust.
- Timber panelled doors and fire published by English Heritage
- Fire safety in historic town centres (published by English Heritage and Cheshire Fire and rescue serevice)

Appendix D Glossary

These definitions are provided to assist the responsible person in understanding some of the technical terms used in this guide. They are not exhaustive and more precise definitions may be available in other guidance.

Term	Definition
Access room	A room through which passes the only escape route from an inner room.
Accommodation stairway	A stair, additional to that required for means of escape purposes. Provided for the convenience of occupants.
Alterations notice	If your premises are considered by the enforcing authority to be high risk, they may issue an alterations notice that requires you to inform them before making any material alterations to your premises.
Alternative escape route	Escape routes sufficiently separated by either direction and space, or by fire-resisting construction to ensure that one is still available irrespective of the location of a fire.
Approved Document B (ADB)[24]	Guidance issued by Government in support of the fire safety aspects of the Building Regulations.
As low as reasonably practicable	A concept where the balance between risk, cost and safety margin is reasonably achieved.
Automatic fire-detection system	A means of automatically detecting the products of a fire and sending a signal to a fire warning system. The design and installation should conform to BS 5839-1.[16] See 'Fire warning'.
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, unless, and for escape purposes only, such area has adequate, independent and separate means of escape.
Child	Anyone who is not over compulsory school age, ie before or just after their 16th birthday.
Class 0 surface spread of flame	Class 0 materials not only restrict the rate of surface spread of flame but also the rate at which heat is released from them. Class 0 is a higher standard than those referred to in British Standards.
Combustible material	substance that can be burned to provide heat or power

Term	Definition
Compartment wall and/or floor	A fire-resisting wall or floor that separates one fire compartment from another.
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.
Dangerous substance	1. A substance which because of its physico-chemical or chemical properties and the way it is used or is present at the workplace creates a risk 2. A substance subject to the Dangerous Substance and Explosive Atmosphere Regulations 2002 (DSEAR)
Dead end	Area from which escape is possible in one direction only.
Direct distance	The shortest distance from any point within the floor area to the nearest storey exit, or fire-resisting route, ignoring walls, partitions and fixings.
Domestic buildings	Premises occupied as a private dwelling, excluding those areas used in common by the occupants of more than one such dwelling.
Electromechanical operated lock (electric lock)	an electric lock contains electrical means such as a solenoid or an electric motor to operate the bolt and/or the latch or to prevent the lock or latch from being operated manually
Electromechanical operated strike (electric strike)	1. release mounted in the door frame which releases the door whilst the lock remains in the locked or latched condition; release action may take place upon either aplication or removal of electrical energy. 2.An electromechanical device used in place of a standard strike for the purpose of allowing a locked door to be opened by push or pull without manual lock operation
Emergency lighting	Lighting provided for use when the supply to the normal lighting fails.
Enforcing authority	Means the Fire and Rescue Authority or any other Authority specified in Article 25 of the Regulatory Reform (Fire Safety) Order 2005.[1]
Escape lighting	▪ That part of the lighting system provided to enable people to use the escape route. (This may be the normal lighting system.)
Escape route	Route forming that part of the means of escape from any point in a building to a final exit.

Term	Definition
Evacuation lift	A lift that may be used for the evacuation of people with disabilities, or others, in a fire
External escape stair	Stair providing an escape route, external to the building.
Fail-safe	Locking an output device with the application of power and having the device unlock when the power is removed. Also known as fail unlock, reverse action or power locked
False alarm	A fire signal, usually from a fire warning system, resulting from a cause other than fire.
Final exit	An exit from a building where people can continue to disperse in safety and where they are no longer at danger from fire and/or smoke.
Fire compartment	A building, or part of a building, constructed to prevent the spread of fire to or from another part of the same building or an adjoining building.
Fire door	A door or shutter, together with its frame and furniture, provided for the passage of people, air or goods which, when closed is intended to restrict the passage of fire and/or smoke to a predictable level of performance.
Fire-fighting lift	A lift, designed to have additional protection, with controls that enable it to be used under the direct control or 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 stairway	See fire-fighting shaft.
Fire resistance	The ability of a component or construction of a building to satisfy, for a stated period of time, some or all of the appropriate criteria of BS EN 1363-1[45] BS 476[32] and associated standards. (Generally described as 30 minutes fire resisting or 60 minutes fire resisting.)
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 strategy	A number of planned and co-ordinated arrangements designed to reduce the risk of fire and to ensure the safety of people if there is a fire.
Fire stopping	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

Term	Definition
	system.)
Flammable material	Easily ignited and capable of burning rapidly; inflammable.
Highly flammable	Generally liquids with a flashpoint of below 21℃. (The Chemicals (Hazard Information and Packaging for Supply Regulations 2002[46] (CHIP) give more detailed guidance.)
Hazardous substance	1. See Dangerous substance 2. A substance subject to the Control of Substances Hazardous to Health Regulations 2002 (COSHH).
Inner room	A room from which escape is possible only by passing through another room (the access room).
Licenced premises	Any premises that require a license under any statute to undertake trade or conduct business activities.
Low fire risk	Where occupant densities are low, occupants are familiar with the premises, excellent visual awareness, and very limited combustibles.
Material change	An alteration to a building, process or service which significantly affects the level of risk in that building.
Means of escape	Route(s) provided to ensure safe egress from premises or other locations to a place of total safety.
Place of reasonable safety	A place within a building or structure where, for a limited period of time, people will have some protection from the effects of fire and smoke. This place, usually a corridor or stairway, will normally have a minimum of 30 minutes fire resistance and allow people to continue their escape to a place of total safety.
Place of total safety	A place, away from the building, in which people are at no immediate danger from the effects of a fire.
Premises	Means 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.
Protected lobby	A fire-resisting enclosure providing access to an escape stairway via two sets of fire doors and into which no room opens other than toilets and lifts.

Term	Definition
Protected stairway	A stairway which is adequately protected from the rest of the building by fire-resisting construction.
Protected route	An escape route which is adequately protected from the rest of the building by a fire-resisting construction.
Refuge	A place of reasonable safety in which a disabled person may rest before reaching a place of total safety. It should lead directly to a fire-resisting escape route.
Responsible person	The person ultimately responsible for fire safety as defined in the Regulatory Reform (Fire Safety) Order 2005.[1]
Relevant persons	Any person lawfully on your premises and any person in the immediate vicinity, but does not include firefighters carrying out fire-fighting duties.
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	A feature of the premises, from which the fire hazards and persons at risk are identified. The actions you have taken or will take to remove or reduce the chance of a fire occuring or the spread of fire and smoke. The actions people need to take in case of fire The necessary information, instruction and training needed and how it will be given.
Smoke alarm	Device containing within one housing all the components, except possibly the energy source, for detecting smoke and giving an audible alarm.
Staged alarm	A fire warning system which can produce a number of staged alarms within a given area.
Storey exit	An exit giving direct access into a fire-resisting stairway or an external escape route. A final exit or a doorway giving direct access to a protected stairway or external escape route
Travel distance	The actual distance to be travelled by a person from any point within the floor area to

Term	Definition
	the nearest storey exit or final exit, having regard to the layout of wall, partitions and fixings.
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	Obligations required by the features of the workplace, the activity, the circumstances or a hazard.
Young person	(a) a person aged 16 years, from the date on which he attains that age until and including the 31st August which next follows that date, (b) a person aged 16 years and over who is undertaking a course of full-time education at a school or college which is not advanced education, or (c) a person aged 16 years and over who is undertaking approved training that is not provided through a contract of employment. For the purposes of paragraphs (b) and (c) the person — (a) shall have commenced the course of full-time education or approved training before attaining the age of 19 years, and (b) shall not have attained the age of 20 years.

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Any views expressed in these documents are not necessarily those of the ODPM.

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