



CONSULTATION DOCUMENT

Draft Fire Safety Guide



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Draft Fire Safety Guide

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Chapter 1: INTRODUCTION

1. This guide has been produced to assist those who have responsibility for ensuring fire safety in premises providing residential care in Scotland. The *Fire (Scotland) Act 2005* introduces changes to fire safety law in Scotland and previous fire safety legislation will be repealed. Sections 53, 54 and 56 of the *Fire (Scotland) Act 2005* (as amended) place a duty on employers, employees, managers, owners and others in relation to fire safety. The guide may also be helpful to all other persons with a role in ensuring fire safety in premises providing residential care.
2. Fatalities have occurred in fires in premises providing residential care and this clearly demonstrates the serious risk which fire poses to the occupants of these premises and the potential tragic consequences which may occur. This guide will assist owners, managers, care providers and staff to achieve a fire safe environment in their premises and will also assist in achieving compliance with fire safety law.
3. This guidance has been prepared by the Scottish Executive, and is one in a series of guidance documents aimed at offering fire safety advice for different types of premises. In Scotland this guide replaces the 1983 Home Office and Scottish Office "*Draft guide to fire precautions in residential care premises*" (ISBN 0 86 252084 3) and also replaces the use of "*Fire safety: An employer's guide*" (ISBN 0 11 341229 0), in respect of residential care premises.
4. Guidance issued for NHS residential care premises "*Scottish Health Technical Memorandum 84: Fire risk assessment in residential care premises*" (SHTM 84), was previously made more widely available on an interim basis awaiting the issue of this current guide.
5. The guide has 12 chapters and a number of Technical Annexes numbered 13.1 to 13.13. The first 3 chapters are an introduction, a description of the scope and an overview of fire safety law and responsibilities under the *Fire (Scotland) Act 2005*. The fourth chapter explains what fire safety risk assessment is and how it may be undertaken. Fire safety risk assessment should be the foundation for all the fire safety measures in the premises. Chapters 5 to 12 are about managing fire safety and identifying the general fire safety measures which should be in place. These chapters are written to provide guidance for those with statutory duties in relation to fire safety (as set out in the *Fire (Scotland) Act 2005*). In the event that this guide is read by persons with duties under the *Fire (Scotland) Act 2005* and those persons feel unable to apply the guidance, then they should seek assistance from a competent person. In this respect, the Fire and Rescue Authority or Joint Fire and Rescue Board, as enforcer of the legislation, cannot undertake the role of a competent person.
6. The Technical Annexes set out more information about fire safety measures and offer benchmarks against which fire safety measures can be measured. The Technical Annexes contain some information that may require a level of knowledge and experience of fire safety matters.

Chapter 2: SCOPE

7. Part 3 of the *Fire (Scotland) Act 2005* and related subordinate legislation makes provision in relation to fire safety in certain premises. These premises are defined in section 78 of the Act but are predominantly most premises which are not private dwellings. The Act and related subordinate legislation covers general fire safety which includes risk reduction measures, means of fire warning, fire fighting, escape and staff training and instruction.

8. The guidance in this document is applicable to general fire safety in premises providing residential care. This includes premises in which a care homes service is provided, as defined in the *Regulation of Care (Scotland) Act 2001*, for the following category of resident:

- Older people;
- Children and young people;
- People with learning disabilities;
- People with drug and alcohol problems;
- People with mental health problems; and
- People with physical and sensory impairment.

9. The fire safety provisions in Part 3 of the *Fire (Scotland) Act* take precedence over terms, conditions or restrictions in licences which relate to fire safety. Section 71 of the Act makes it clear that terms, conditions or restrictions in licences – including statutory certification or registration schemes – are to have no effect if they relate to fire safety requirements or prohibitions which are, or could be, imposed under Part 3 of the Act.

10. Where possible, this guide does not set prescriptive standards, but provides recommendations, guidance and benchmarks for use when assessing the adequacy of fire safety measures. Other fire safety risk assessment methods may be equally valid to comply with fire safety law. Fire safety measures in some premises may not be the same as the recommendations used in this guide but so long as it can be demonstrated that they meet an equivalent standard of fire safety, they are likely to be acceptable. This means there is no obligation to adopt any particular solution in this guide if the requirements can be met in some other way.

11. In providing an acceptable level of fire safety, there should be recognition of the need to maintain a homely, non institutionalised environment, where the residents' quality of life requires to be balanced with safety and choice.

12. Where premises have resident or staff bedrooms located on a floor that is four or more storey heights above the ground or access level, or the only escape route from a basement is by way of a stair leading to the ground storey, then specialist advice should be sought in respect of appropriate fire safety measures.

13. Where the residential care premises include a historic building, there may be a need to maintain the character of the building and this may prevent the introduction of conventional fire safety measures and specialist advice may be required.

14. It should be noted that the provision of such specialist advice is not a role for the Fire and Rescue Authority or the Joint Fire and Rescue Board.

15. All new buildings, including premises providing residential care, must be designed to the mandatory standards under the *Building (Scotland) Regulations 2004*. Guidance on the design and construction of new premises providing residential care is contained in the *Scottish Building Standards Technical Handbook for Non Domestic Buildings*. Similarly buildings which undergo extension, structural alteration or change of use should also meet the same standards.

16. In many premises, existing fire safety measures have been incorporated in accordance with Building Regulations. Nothing in this guide should be interpreted as permitting a reduction in the standard of fire safety measures where they have been provided to comply with Building Regulations.

Chapter 3: WHAT THE LAW REQUIRES

17. Part 3 of the *Fire (Scotland) Act 2005* and the *Fire Safety (Scotland) Regulations 2006** set out the fire safety duties for the majority of premises in Scotland, with the exception of private dwellings. Premises which provide residential care will be subject to the Act and related subordinate legislation. In general, the legislation seeks to ensure the safety of persons in the premises in respect of harm caused by fire, (whether they are employees, residents, visitors or others) by setting out fire safety responsibilities.

18. The legal duty which is imposed by the legislation seeks to achieve safety in the event of fire and can be considered in terms of seven general requirements:

- Carrying out a fire safety risk assessment of the premises;
- Putting in place fire safety measures which have been identified as necessary as a result of the fire safety risk assessment outcome;
- Implementing these fire safety measures using risk reduction principles;
- Putting in place fire safety arrangements for the ongoing control and review of the fire safety measures;
- Complying additionally with the specific requirements of the fire safety regulations;
- Keeping the fire safety risk assessment and outcome under review; and
- Record keeping.

19. Guidance on complying with these requirements is considered in more detail in the remaining chapters. It should be noted that this chapter of the guidance is not intended to be a comprehensive summary of requirements under the *Fire (Scotland) Act 2005* and related subordinate legislation.

Who Must Comply with these Duties?

20. The responsibility for complying with these fire safety duties in residential care premises sits with the employer, other persons who have control of the premises to any extent and any persons who through contract or tenancy have obligations in respect of maintenance or safety.

Who Enforces the Fire Safety Law?

21. The responsibility for compliance with the legislation sits principally with the persons who operate and work in residential care premises, but there is also provision in the legislation for an enforcement authority with enforcement powers.

22. The Fire and Rescue Authority or Joint Fire and Rescue Board for the area will be the enforcing authority in respect of the majority of premises providing residential care. The powers of enforcement officers in relation to premises for which they have enforcement responsibilities, are listed in section 62 of the Act and are summarised below.

23. Enforcement officers may do anything necessary to allow them to complete their duties, including:

- Entering premises for inspection at any reasonable time, or at any time if there is reason to believe that the situation is dangerous;
- Requesting information, records, etc, or assistance from any persons with fire safety duties;
- Inspecting, copying or removing any documents from the premises;
- Carrying out any inspections, measurements or tests on the premises or any article or substance found on the premises;
- Taking samples of any article or substance found on the premises;
- Dismantling articles found on premises which appear likely to cause danger; and
- Taking possession of an article for purposes of examination or use as evidence.

24. If the enforcing authority is dissatisfied with the outcome of the fire safety risk assessment, or the action taken, or the fire safety measures in place, it has the power to take action which could be:

- Informal action; or
- Formal enforcement action which could result in the issue of an enforcement notice that requires specified action to be taken; or
- In extreme cases, a prohibition notice may be issued that restricts the use of all or part of the premises until specified matters are remedied; or
- Reporting the matter for prosecution. Failure to comply with a notice issued by the enforcing authority **or** placing persons at risk by failing to carry out any duty imposed by fire safety law, is an offence.

25. Enforcing authorities should take into account the content of this guide to assist in determining whether enforcement action may be necessary but in doing so they must have a flexible approach to enforcement and must not use the benchmarks in the Technical Annexes as prescriptive standards. This would be a misinterpretation: the benchmarks are provided to facilitate the assessment of existing fire safety provisions.

26. Where there is disagreement with the enforcing authority on compliance issues, there is a mechanism for joint referral for 3rd party independent determination. The enforcing authority will supply details in relevant cases. There is also a right of appeal to the court against formal enforcement action.

27. Additionally, if the premises pose a serious risk to persons in respect of harm caused by fire, or are considered likely to pose such a risk, the authority may issue an alterations notice that obliges the recipient to inform the enforcing authority before making specified changes to the premises.

28. In all cases when care providers are dealing with an enforcing authority, it is important to be able to distinguish between fire safety measures that are necessary for the protection of life and that are required to comply with fire safety legislation, as opposed to any fire safety measures that provide a higher standard than is necessary to comply with fire safety legislation.

29. Fire and Rescue Service crews may visit premises to enable crew members to gain familiarisation with them in the event they are called to a fire in the premises. This type of visit is unlikely to include an assessment of compliance with fire safety law although the crew may point out fire safety hazards in the course of the visit. The fact that a Fire and Rescue Service visit has taken place should not be interpreted as an endorsement of fire safety measures and procedures in the premises.

Chapter 4: FIRE SAFETY RISK ASSESSMENT

30. Care providers, managers and any persons with control to any extent of the residential care premises, have duties in respect of fire safety of the premises. It is a legal requirement to carry out a fire safety risk assessment. This forms a crucial element in the overall safety policy for the premises. It is essential that the fire risk assessment is specific to **fire safety** and to the **premises concerned**. An overall generic risk assessment will **not** be sufficient. It is essential that the person who undertakes this fire safety risk assessment is competent to do so.

31. Persons can be considered competent where they have sufficient technical training and experience or knowledge, both to understand fully the requirement of fire safety procedures and management involved, and to undertake properly the measures referred to in this guide.

32. This chapter explains fire safety risk assessment and sets out a step by step guide through the process. The method suggested shares a similar approach to that used in general health and safety guidance.

What Is a Fire Safety Risk Assessment?

33. A fire safety risk assessment is an organised and methodical look at the premises, the activities within the premises, the potential for a fire to occur and the harm it could cause to the people in and around the premises. The existing fire safety measures which have been taken are evaluated to establish if they are adequate or if more requires to be done.

34. For the purpose of fire safety risk assessment, a **hazard** is a situation that can give rise to a fire, **risk** is the potential for a fire to occur and cause death or injury.

35. The aims of a fire safety risk assessment are:

- To identify hazards and reduce the potential for a fire to occur; and
- To determine what fire safety measures and management policies are necessary to ensure the safety of people in the building should a fire occur.

How is a Fire Safety Risk Assessment carried out?

36. There are 5 steps in the assessment process and these are shown in Figure 1.

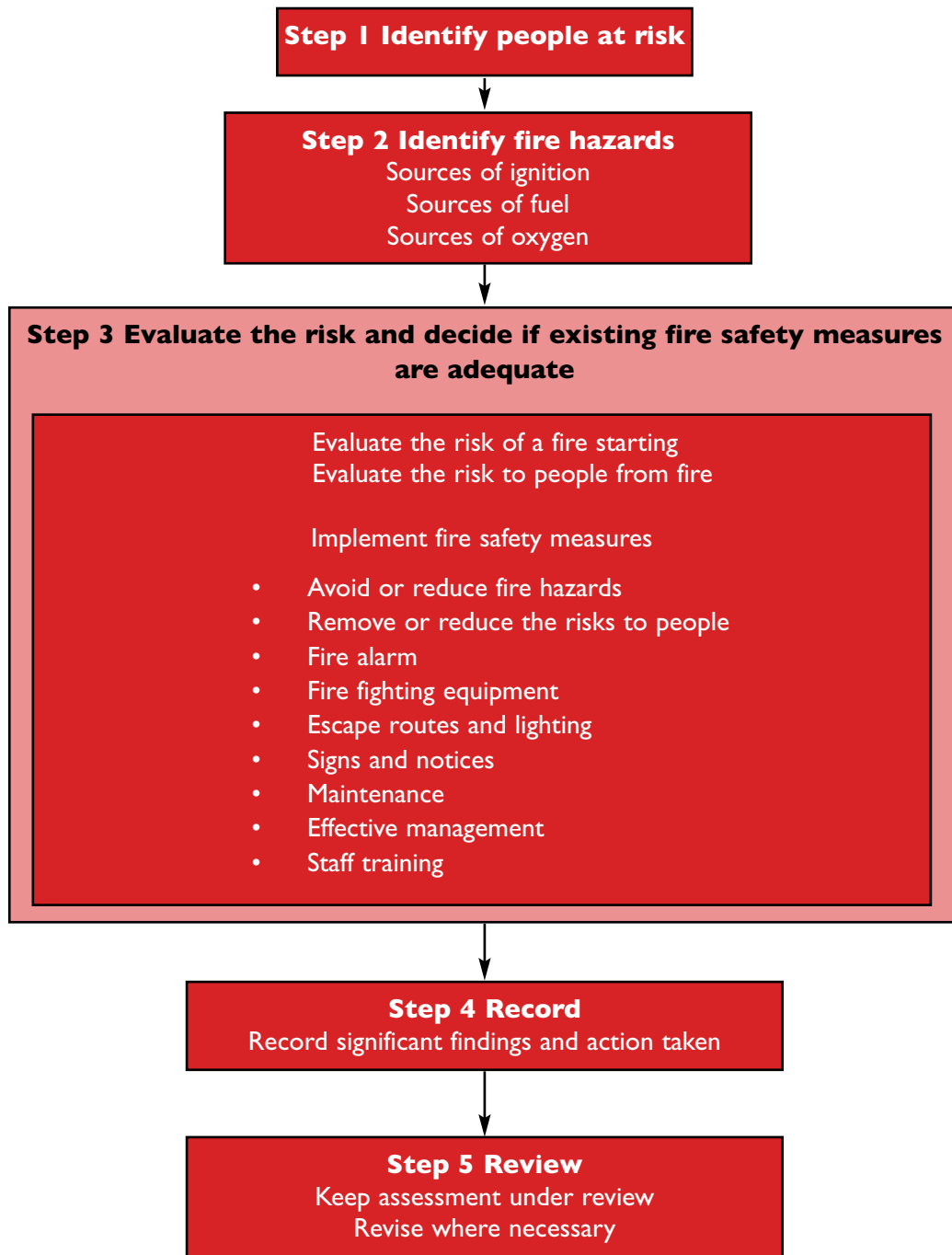


Figure 1. Five steps of the fire safety risk assessment process.

Step 1: Identify People at Risk

37. An assessment should be made of those persons at risk if a fire occurs. This involves identifying the number, dependency and location of residents, staff and other persons who frequent the residential care premises. In considering staff, any disability should be taken into account along with the inexperience, lack of awareness and immaturity of any young persons employed. In addition, the fact that visitors to the premises may have disabilities and will be unfamiliar with the premises should be taken into account.

38. Residential care buildings often pose special problems in respect of fire as the residents may be asleep or be under the influence of some form of medication when a fire starts and residents' mobility, awareness and understanding therefore may be impaired. This will directly affect their ability to respond to an emergency.

39. In this guide the term dependency is used to mean a resident's ability to understand and physically respond to a warning of fire. In this context and for the purposes of this guide only, 3 categories of dependency are used. These categories are **high, medium** and **low**.

- **Low dependency** describes residents who have the physical and mental capability to respond to a fire emergency and exit the premises unaided.
- **Medium dependency** describes residents who either:
 - (a) will require physical assistance or guidance from a staff member to respond appropriately in a fire emergency, or
 - (b) can exit the premises unaided but will take an extended time to achieve this.
- **High dependency** describes residents who are totally dependent on staff and may require the assistance of 2 or more staff members in a fire emergency.

40. The provision of fire safety measures will be influenced by the dependency category of residents in the premises. It will be the care providers of the residential care premises who will determine the level of care to be provided in their premises. They will also need to decide the category and dependency level of the residents that they may wish to accommodate in their premises and be mindful of the changes to the abilities of the resident population that may occur over time.

41. The Personal Evacuation Needs of residents who fall into the medium and high dependency category should be considered. Many residential care premises will have a number of residents with varying levels of dependency and it will be necessary to identify the number of residents under each category. Their mobility and responsiveness should be considered and needs should be established in terms of assistance required and method of movement in an emergency situation.

Step 2: Identify Fire Hazards

42. This step involves identifying potential ignition sources, the materials that might fuel a fire and the oxygen supplies which will help it burn.

43. For a fire to start, three components are needed:

- A source of ignition;
- Fuel; and
- Oxygen.

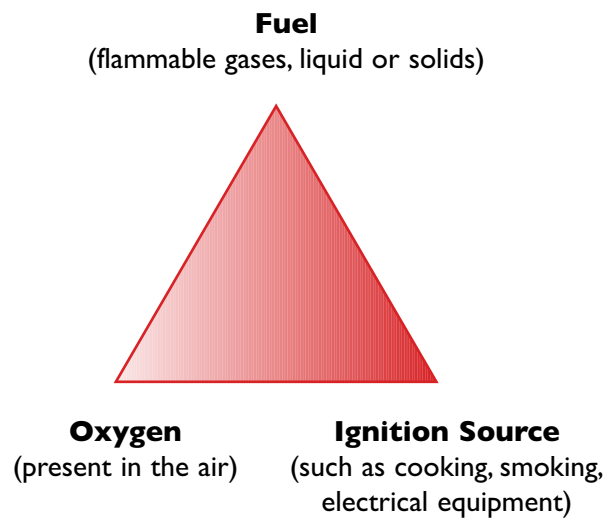


Figure 2. The triangle of fire

44. These components can be represented in the form of a triangle of fire as shown in Figure 2 above. If any one of these components is missing, a fire cannot start. Taking steps to avoid the three coming together will therefore reduce the chances of a fire occurring.

Identify Sources of ignition

45. Potential ignition sources are those where sources of heat could get hot enough to ignite material found in the premises. These sources could include:

- Smokers' material such as cigarettes, matches and lighters;
- Naked flames such as candles or gas open-flame equipment;
- Electrical, gas or oil-fired heaters (fixed or portable);
- Hot processes such as repair work by contractors;
- Cooking equipment;
- Lighting;
- Deliberate fire raising; and
- Faulty or misused electrical equipment.

46. Indications of 'near-misses', such as scorch marks on furniture or fittings, discoloured or charred electrical plugs and sockets, cigarette burns etc, can help identify hazards.

Identify Sources of Fuel

47. Anything that burns is fuel for a fire. Material which will burn reasonably easily and is in enough quantity to provide fuel for a fire or cause it to spread to another fuel source should be identified. This applies to contents, fixtures and fittings and also to structure and materials used to construct or line walls and ceilings such as polystyrene or tiles. How these fuels might contribute to the spread of fire should be identified.

48. Some of the most common 'fuels' found are:

- Textiles, soft furnishings, clothing and laundry;
- Flammable liquids and solvents, such as white spirit, methylated spirit, cooking oils, disposable cigarette lighters and adhesives;
- Seasonal or religious occasion decorations;
- Plastics and rubber, such as video tapes and upholstered furniture;
- Waste material, particularly when finely divided such as shredded paper; and
- Flammable gases such as liquefied petroleum gas (LPG) and aerosols.

Identify Sources of Oxygen

49. The main source of oxygen for a fire is in the air around us. Air supply generally falls into one of two categories: natural air flow through doors, windows and other openings; or mechanical air conditioning systems and air handling systems. In many buildings there will be a combination of sources, which will be capable of introducing or extracting air to or from the building.

50. Additional sources of oxygen can sometimes be found in materials used or stored in premises such as:

- Some chemicals (oxidising materials), which can provide a fire with additional oxygen and so assist it to burn, or
- Oxygen supplies from cylinder storage and piped systems used in oxygen therapy.

51. Oxygen apparatus poses a special hazard. High concentrations of oxygen can cause materials to burn extremely rapidly and some materials which are not normally considered combustible, can burn in an enriched oxygen atmosphere. Oxygen is also dangerous when in contact with grease or oil.

Step 3: Evaluate the Risk and Decide if Existing Fire Safety Measures are Adequate

52. Step 3 of the fire safety risk assessment involves an assessment of the hazards and analysis of whether the fire safety measures taken, reduce the risks posed by the hazards to an acceptable level.

Evaluate the Risk of a Fire Starting

53. The chances of a fire starting will be low if there are 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 bedside 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 intentionally setting fire to external rubbish bins.

54. The premises should be critically examined to identify any potential accidents and any acts or omissions which might allow a fire to start. This should include situations that may present an opportunity for deliberate ignition.

Evaluate the Risk to People from a Fire Starting in the Building

55. Having considered the people likely to be at risk should a fire start in the building and the chances of a fire occurring, the extent of the actual risk to those people should a fire start and spread must be considered. The risk to residents will be partly influenced by their dependency and capability; this will have been identified at Step 1 of this process.

56. In evaluating the risk to people it is necessary to consider situations such as:

- Fire starting on a lower floor affecting the escape routes for people on upper floors;
- Fire developing in a space that people have to pass by to escape from the building;
- Fire or smoke spreading through a building via routes such as poorly installed, poorly maintained or damaged vertical shafts, service ducts, ventilation systems, walls, partitions, ceilings and roof voids; and
- Fire and smoke spreading through the building due to open doors, doors not fitted with self closers, doors being wedged open or damaged doors.

Risk Reduction

57. In implementing fire safety measures, fire safety law requires that certain principles must be considered, these are:

- Avoiding risks;
- Evaluating risks which cannot be avoided;
- Combating risks at source;
- Adapting to technical progress;
- Replacing the dangerous with the non-dangerous or less dangerous;
- Developing a coherent fire prevention policy which covers technology, organisation of work and the influence of factors relating to the working environment;
- Giving collective fire safety protective measures priority over individual measures; and
- Giving appropriate instruction to employees.

Avoid or Reduce the Hazards that May Cause a Fire

58. Having identified the fire hazards in Step 2, the risks should be avoided or removed if reasonably practicable to do so. If the hazards cannot be removed, measures should be taken to reduce the risks.

Remove or Reduce Sources of Ignition

59. There are various ways to reduce risk caused by potential sources of ignition, for example:

- Replace naked flame and radiant heaters with fixed convector heaters or a central heating system;
- Restrict the movement of, and guard, portable heating appliances;
- Operate a safe smoking policy in designated smoking areas and prohibit smoking elsewhere;
- Ensure electrical and mechanical equipment is installed, used, maintained and protected in accordance with the manufacturer's instructions; and
- Take precautions to avoid deliberate fire raising.

Remove or Reduce Sources of Fuel

60. There are various ways in which to reduce the risks caused by materials and substances which burn, for example:

- Ensure flammable materials are stored properly;
- Remove combustible wall and ceiling linings, such as polystyrene or carpet tiles, to reduce the surface rate of flame spread and smoke production; and
- Develop a system for the control of combustible waste by ensuring that rubbish is not allowed to build up.

Remove or Reduce Sources of Oxygen

61. The potential source of oxygen supplied to a fire can be reduced by:

- Closing all doors and other openings not required for ventilation;
- Ensuring that doors are close fitting and, where appropriate, fitted with seals;
- Controlling the use and storage of oxygen cylinders, ensuring that they are not leaking and that where they are located is adequately ventilated; and
- Closing down air circulation equipment.

Remove or Reduce the Risks to People from a Fire

62. The fire risk to people should be reduced to as low as is reasonable by putting into place fire safety measures. The level of fire safety measures provided in residential care premises should be proportional to the risk posed to the safety of the people in the building. The higher the risk of fire and risk to life, the higher the standards of fire safety measures required. Fire safety law places fire safety measures under 7 headings, which are:

- Measures to reduce the risk of fire and the spread of fire;
- Means of escape;
- Securing that the means of escape can be safely and effectively used;
- Means for fighting fires;
- Means for detecting fire and giving warning;
- Arrangements for action to be taken in event of fire, including instruction and training and mitigation of the effects of fire; and
- Other measures prescribed in fire safety regulations.

63. Chapters 6 to 12 contain further guidance on fire safety measures which can be adopted within premises providing residential care and Technical Annexes 13.1 to 13.13 contain further information and benchmarks against which existing fire safety measures can be evaluated. The guidance should be applied in a flexible manner but without compromising the safety of the occupants.

64. Where improvements to fire safety measures in premises are identified as a result of fire safety risk assessment, then an action plan for the implementation of the improvements should be drawn up. An action plan should have determined timescales indicating the completion dates for any action required. If the improvements fall within the subject area of Technical Annexes 13.1 to 13.7 or involve compensation by the installation of automatic life safety fire suppression systems, then the improvements should be to the standards required by Building Regulations.

65. It is important that the status of the Technical Annexes in this guide is understood. Most of the benchmarks in the Technical Annexes are based on Building Regulation standards which are the standards which should be provided in new build premises. These benchmarks are provided to facilitate the assessment of existing provision, they are not targets to be achieved and it is not anticipated that care providers will, as a result of fire safety risk assessment, automatically decide that their existing premises or fire safety measures should be upgraded to these standards.

66. Enforcing authorities should also not be seeking to compel these standards on care providers on a prescriptive basis. Prescription is not compatible with fire safety risk assessment. The circumstances of the premises should be examined individually and decisions in respect of fire safety standards must at all times be based on judgement of risk and be justifiable, both from a compliance and an enforcement perspective.

Step 4: Record Fire Safety Risk Assessment Information

67. Having carried out a fire safety risk assessment in relation to the residential care premises, the findings should be recorded. Fire safety law requires information to be recorded where 5 or more employees are employed, or the premises are subject to licensing, registration or certification or an alterations notice has been issued requiring this. Recommendations in respect of recording are contained in chapter 5.

Step 5: Review of Assessment

68. A review of the fire safety risk assessment should be carried out regularly. If the findings of the fire safety risk assessment are considered to be no longer valid or there has been a significant change to the premises that has affected the risk or the fire safety measures, the assessment should be reviewed. Such changes that might prompt a review are:

- A change in the number of people present or the characteristics of the occupants;
- Changes to the dependency of residents over time;
- Changes to work procedures, including the introduction of new equipment;
- Alterations to the building, including the internal layout;
- Significant changes to furniture and fixings;
- The introduction or increase in the storage of hazardous substances; and
- Becoming aware of shortcomings or potential improvements.

69. The potential risk of any proposed change should be considered before the change is introduced. It is usually more effective to minimise a risk before introducing it. If a change introduces new hazards consider the fire risk and, if significant, do whatever is needed to keep the risks under control. In any case the assessment should be kept under review to make sure that the fire safety measures remain adequate.

70. If a fire or 'near miss' occurs, this could indicate that the existing assessment may be inadequate and a re-assessment should be carried out. Identify the cause of any incident and then review and, if necessary, revise the outcome of the fire safety risk assessment in the light of this experience.

Chapter 5: MANAGING FIRE SAFETY

71. A management commitment to fire safety is essential to assist with achieving suitable fire safety standards in premises and in the maintenance of a staff culture of fire safety. This chapter covers management standards that should be achieved within all premises providing residential care, in respect of:

- **Fire safety policy;**
- **Emergency fire action plan;**
- **Fire safety information and training;**
- **Fire drills;**
- **Testing and maintenance of fire safety measures; and**
- **Recording information and keeping records.**

Fire Safety Policy

72. Care providers of residential care premises should ensure that they have a clearly defined fire safety policy for the protection of all persons using the premises including residents, staff and visitors and this should include the arrangements for planning, organisation, control, monitoring and review of fire safety measures. Factors to consider are:

- There should be one named individual with overall management responsibility for fire safety within the premises;
- The arrangements for carrying out and reviewing fire safety risk assessments;
- There should be an adequate number of trained persons responsible for supervising and implementing the emergency fire action plan;
- A copy of the emergency fire action plan and the findings of the fire safety risk assessments, where appropriate, should be available for inspection;
- All means of escape should be maintained to ensure that they can be safely used at all times;
- Escape route lighting, emergency lighting, fire fighting equipment and the fire alarm should be maintained in efficient working order and regularly tested;
- Staff training on fire safety and the arrangements for ensuring that this training is given;
- The need for contingency plans for when life safety systems, such as fire-detection and alarm systems or sprinklers, are out of order;
- Arrangements for notifying information on risks and fire safety measures to:
 - a. workers from outside agencies or undertakings who are working in the premises and their employers; and
 - b. the parents of any child who may be employed to work on the premises.

73. Additional considerations in larger organisations are:

- The responsibility for fire safety within the organisation and the arrangements for ensuring fire safety in all premises;
- The responsibility for fire safety at board level; and
- The arrangement where regional or area managers may monitor and check that individual managers are meeting the requirements of fire safety law.

Emergency Fire Action Plan

74. In the majority of residential care buildings, staff are always present and are expected to play a role in the evacuation of residents. The method and speed of evacuation will be influenced by the location and dependency of the residents and the number of staff available. It is a management responsibility to have in place both an emergency fire action plan and arrangements to implement the plan. Emergency evacuation is a management responsibility which cannot be delegated to the Fire and Rescue Service.

75. One of two strategies may be appropriate for the premises, the appropriateness of which depends principally on the capability of residents, the potential for staff to assist with evacuation and the configuration and construction of individual premises. These are:

- a. **Immediate evacuation;**
- b. **Progressive evacuation.**

76. **Immediate evacuation** describes a situation where, upon discovery of a fire and a warning being given, the emergency fire action plan involves immediate evacuation of the building.

77. **Progressive evacuation** describes a situation where, upon discovery of a fire and a warning being given, the predetermined emergency fire action plan involves,

1. Carrying out an assessment of the situation to determine where the fire is and who is at immediate risk;
2. Evacuation of those residents considered immediately at risk, to a separate compartment or sub-compartment on the same floor; and
3. Progressive movement of residents where needed as the situation develops.

78. For many residential care premises, the existence of high dependency residents will favour adoption of a progressive evacuation strategy due to the difficulty in movement and extended evacuation time, but this must be accompanied by suitable fire safety measures which will ensure that the development and spread of fire is restricted, that early warning of fire is given and that prompt response and appropriate action by staff is taken. Should a fire occur where there are high dependency residents, the plan is likely to require consideration of evacuation of the sub compartment involved, using the principle of progressive evacuation. If the capability of residents is appropriate for the use of immediate evacuation, then progressive evacuation should not be adopted.

79. In existing buildings it may be that the level of fire safety measures may dictate which strategy could be achieved and subsequently what category of resident can be accommodated: certain parts of the building may not be suitable for high dependency residents. This in itself can pose difficulties in the long term where a resident's dependency may change over time.

80. Although staffing levels may be influenced by the relative need for care within the premises, it is necessary to consider the time required to transfer residents with varying degrees of dependency to a place of temporary safety and the number of staff or carers required to carry out an evacuation in the event of an emergency. It is important therefore that the staffing levels in relation to the emergency fire action plan are given careful consideration along with the location of particular residents. A small number of staff cannot be expected to move large numbers of high dependency residents. In addition, difficulties are likely to be more severe at night.

81. There must be a written emergency fire action plan which sets out the action that staff and other people in the premises should take in the event of a fire. This plan should be kept on the premises, be available to and known by staff and form the basis of the training and instruction which is provided. The plan should be available for inspection by the enforcing authority.

82. The purpose of the plan is:

- To ensure that the people on the premises know what to do if there is a fire; and
- To ensure that appropriate action is taken in the event of fire and that the premises can be safely evacuated.

83. In drawing up the emergency fire action plan, the results of the fire safety risk assessments must be considered and the Personal Evacuation Needs for residents with medium or high dependency must be taken into account. The plan should also cover the fact that where progressive evacuation is the strategy, there may be an ultimate need to have a full evacuation of all residents and not just to move them to internal holding points for evacuation by the Fire and Rescue Service.

84. The plan should include the contingency arrangements in place to move residents who may have been evacuated from the building, to short term shelter where this is necessary to avoid hazardous weather conditions or because the building or part of the building has become unusable.

85. The plan should set out details of the procedures to be followed by staff in the event of fire and by any other persons present. It must be specific to the premises and should include:

- How people will be warned if there is a fire;
- What staff should do if they discover a fire;
- What staff should do in the event of a fire;
- The arrangements for calling the Fire and Rescue Service;
- The specific action to be taken by the person in charge when the fire alarm activates or a fire is discovered;
- The procedure to be followed to evacuate the premises by staff and by any other persons present, taking into account the Personal Evacuation Needs of individual residents;
- In the case of progressive evacuation, the emergency arrangements should it be necessary to evacuate all of the residents;
- Where residents should assemble or be taken after they have left the premises and procedures for checking whether the premises have been evacuated;
- Arrangements for fighting fire by staff trained in the use of portable fire extinguishers;
- Any processes or power supplies that need to be stopped or isolated if there is a fire; and
- Procedures for meeting the Fire and Rescue Service on their arrival and notifying them of the circumstances of the incident, whether all persons are accounted for and the presence of any special risks.

86. It is useful to keep a 'fire register' which contains a list of all residents and includes their rooms, brief details of their circumstances, Personal Evacuation Needs, medication and other special needs. In the event of a fire or other emergency, this record should be made available to the Fire and Rescue Service or other emergency service.

Fire Safety Information and Training

87. The actions of staff are crucial to the safety of residents in residential care premises. It is essential that staff know what they have to do to safeguard themselves and others on the premises and to have an awareness of the importance of their actions. This includes risk reduction, maintenance of fire safety measures and action if there is a fire. Staff training and awareness of fire safety is of paramount importance in residential care premises.

88. All staff (including temporary and agency staff) should be given information, training and instruction on the fire safety measures to be taken or observed on the premises, including the action to be taken in case of fire. The specific fire safety training needs of any young persons employed should be considered. Training of each member of staff should take place as soon as possible after they are appointed and regularly after that to ensure that they remain familiar with procedures. Two training sessions per year is an appropriate minimum frequency, but this may be varied to suit local needs. Information should be given to staff whenever there is a change in the risk from fire, where changes have been made to the emergency fire action plan or other fire safety measures, or where working practices or people's responsibilities have changed.

89. Staff who have a supervisory role should be given details of the findings of the fire safety risk assessments and should receive additional training which will enable them to discharge their specific responsibility.

90. Where staff may require to physically move or assist residents during an evacuation, they should receive training on the method of achieving this and should be familiar with the use of any evacuation aids or equipment provided for this purpose.

91. Written instructions must be concise, comprehensible and relevant and must be reviewed and updated as new working practices and changes are introduced. Inclusive employment policies mean that staff with differing levels of capability may be present in premises and the fire safety risk assessments should consider whether further instruction or guidance is necessary for those staff, to ensure that the evacuation strategy is appropriate and understood by everyone. Instructions will need to be given to people delegated to carry out particular tasks, such as daily or weekly fire equipment checks.

92. Instruction and training should take place during working hours and should include staff on shift working. The information and instruction must be in a form that can be understood, taking account of those with differing abilities such as hearing or sight impairment, those with learning difficulties and those who do not use English as their first language.

93. All training should support the fire safety strategy and emergency fire action plan, be verifiable and be supported by management records as evidence that adequate training has been given. Fire safety training should be specific to the residential care premises, the dependency of the residents, and should include the following:

- Instruction on the operation of any fire alarm control panel installed within the building, with particular attention to the information displayed and how to interpret this information;
- The action to take on discovering a fire;
- How to raise the alarm and what happens then;
- The action to take upon hearing the fire alarm;
- The significant findings of the fire safety risk assessments;
- The measures that have been put in place to reduce the risk from fire;
- The identity of people nominated with responsibilities for fire safety;
- Any special arrangements for serious and imminent danger to persons from fire;
- The procedures for alerting visitors including, where appropriate, directing them to exits;
- The arrangements for calling the Fire and Rescue Service;
- The measures in place to ensure a safe escape from the building and how they will operate;
- The Personal Evacuation Needs unique to each resident;
- The evacuation procedures for everyone in the building to reach an assembly point at a safe place;
- The principle of progressive evacuation (where appropriate);
- The fire prevention and fire safety measures and procedures in the premises and where they impact on staff and others in the building;
- The location and, where appropriate, the use of fire fighting equipment;
- The location of the escape routes, especially those not in regular use;
- How to open all escape doors, including the use of any emergency fastenings (and locks where appropriate);
- The importance of keeping fire doors closed to prevent the spread of fire, heat and smoke;
- The reason for not using lifts (except those specifically installed or adapted for evacuation use (to BS 5588 Part 8:1999));
- The importance of good housekeeping;

- The risks from flammable materials used or stored on the premises; and
- The precautions to be taken to minimise and control the risks, with particular attention to their role in reducing and controlling fuel and ignition sources.

Fire Drills

94. Practice fire drills should be carried out to check that staff understand the emergency fire action plan (including all relevant Personal Evacuation Needs), to ensure that staff are familiar with operation of the emergency fire action plan, to evaluate effectiveness of the plan and to identify any weaknesses in the evacuation strategy.

95. The frequency of drills for each building will be different and should reflect the level of risk. Practice fire drills should take place at least twice a year with each member of staff participating at least once a year. The practice drills should assume conditions in which one or more escape routes are obstructed by smoke. During these drills, a member of staff who is told of the supposed outbreak should operate the fire alarm and the staff should then rehearse the routine as fully as circumstances allow. The degree of resident participation in a fire drill will depend on the nature of residents and their capability.

96. Where there is the possibility that someone may misinterpret the fire drill and call the Fire and Rescue Service, it may be appropriate to inform the Fire and Rescue Service prior to the commencement and on conclusion of a drill in order to alert them to the exercise and so prevent their unnecessary attendance.

97. Staffing levels should be tested by the fire drills and may require to be modified to ensure effectiveness. The process should be ongoing to ensure that the staffing levels continue to match the level of risk to residents in the premises.

98. Where premises are small with low staff numbers, practice fire drills may require to be modified to the extent appropriate to the premises.

99. When carrying out the fire drill it may be helpful to:

- Circulate details concerning the fire drill and inform all staff of their duty to participate. It may not be beneficial to have 'surprise drills' in certain residential care premises as the health and safety risks introduced may outweigh the benefits;
- Ensure that any equipment which is in use, such as cookers, can be safely left;
- Nominate observers who can assess the appropriateness of actions and identify problems;
- If the fire alarm system is connected to a remote alarm receiving centre, inform the receiving centre, to ensure that the Fire and Rescue Service is not inadvertently called out to the premises, and inform the receiving centre when the fire drill has been completed;
- Inform visitors if they are present; and
- On occasion, have a fire drill when staffing levels are at their minimum.

100. Where the evacuation strategy involves immediate evacuation, a roll-call should be carried out as soon as possible at the designated assembly point(s), and note any people who are unaccounted for. In a fire evacuation this information would need to be passed to the Fire and Rescue Service on arrival. The results of the fire drill should be recorded.

101. Throughout the fire drill, the person in charge and the nominated observers should pay particular attention to:

- Inappropriate actions such as stopping to collect personal items, attempting to use lifts, etc;
- 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 frequently used routes;
- Difficulties with the opening of doors; and
- Doors not being closed as people leave rooms.

Testing and Maintenance of Fire Safety Measures

102. The premises, emergency routes and exits, fire-fighting equipment, fire alarm, emergency lighting and other fire safety measures should be kept in efficient working order and covered by a suitable system of maintenance. There should be regular checks, periodic servicing and maintenance and any defects put right as quickly as possible. The following are examples of checks and tests that should be carried out. Experience in individual premises may show that there is a need to vary the suggested frequencies. The examples of testing and maintenance are not intended to be prescriptive and other testing regimes may be appropriate where this can be justified. Six monthly and annual tests will normally be carried out by a person with specialist knowledge, possibly by entering into a service contract.

103. Daily checks:

- Daily walk through premises and check escape routes to ensure they are clear of obstructions and combustible materials and that self-closing doors are not wedged open.
- Check the fire alarm control and indicating equipment to ensure the system is active and fully operational.
- Where practicable, visually check that emergency lighting units are in good repair and apparently working.
- Check that all safety signs and notices are legible.

104. Weekly tests:

- Test fire alarm system by activating a manual call point (using a different call point for each successive weekly 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. It is good practice to test the alarm at the same time each week, but consider the need to ensure that staff working shifts are given the opportunity to hear the alarm. Where the system is connected to an alarm receiving centre, notification should be made prior to testing.
- Where the fire alarm system comprises interconnected smoke alarms, test the smoke alarms to ensure they are functioning.
- Fire doors should be checked to ensure they are in good working order as follows:
 - Inspect doors for any warping or distortion that will prevent the door from closing flush into the frame;
 - Ensure that self-closing devices operate effectively and any hold-open devices release upon operation of the fire alarm;
 - Check any fire-resisting glazed panels are in good condition and secure in their frame;
 - Check that intumescent strips and smoke seals are in good condition; and
 - Check door signs to ensure they remain legible.

I05. Monthly tests:

- Test all emergency lighting systems 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. Most existing emergency lighting systems will need to be manually tested. However, some modern systems have self-testing facilities that reduce routine checks to a minimum. Depending on the type of installation certain routine checks and routine maintenance work may be able to be done in house. Test methods will vary. Further maintenance may need to be carried out by a competent service engineer.
- Carry out brief visual check of fire extinguishers and hose reels to ensure there are no obvious faults.

I06. Six-monthly tests:

- Six-monthly servicing and preventive maintenance should be carried out on the fire alarm by a competent person with specialist knowledge of fire-warning and automatic detection systems.

I07. Annual tests:

- Maintenance of portable fire extinguishers. (in accord with BS 5306 Part 3).
- Annual discharge test of emergency lighting for units over three years old.
- Maintenance check to hose reels.
- Inspection and test of residential sprinkler system.

Recording information and keeping records

I08. Care providers should keep information and records as necessary to comply with the legislation and have them available for inspection. The information recorded should in itself, offer proof that a suitable fire safety risk assessment has been carried out. Information should be recorded in respect of:

- The significant findings from the fire safety risk assessment;
- The resulting fire safety measures and action to be taken;
- Persons who are especially at risk; and
- Fire safety arrangements for the effective planning, organisation, control, monitoring and review of the fire safety measures.

I09. The serious potential consequences of a fire in residential care premises, demand that high standards of fire safety be observed. The maintenance of accurate records can assist with the provision of fire safety standards, the review of a fire safety risk assessment and with staff awareness. Maintaining an up to date drawing or plan of the premises will assist in verifying that the fire safety measures that are in place are appropriate. Features which could be included in a plan are:

- Indication of essential structural features such as the layout of the premises, escape routes, doorways, walls, partitions, corridors, stairways. etc, including fire-resisting structure and self-closing fire doors provided to protect the means of escape;
- The extent of compartments;
- Details of the number, type and location of the fire-fighting equipment;
- The location of manually operated fire alarm call points and control equipment for the fire alarm;
- The extent and type of automatic fire detectors;
- The location of any emergency lighting equipment and any exit route signs;
- the location of any automatic life safety fire suppression systems such as sprinklers and the location of the sprinkler shut-off valve;

- The location of the main electrical supply switch, the main water shut off valve and, where appropriate, the main gas or oil shut off valves;
- The location of fire hazard rooms; and
- Details of any facilities that are provided to assist fire-fighters.

110. Records of the maintenance and testing recommended in paragraphs 102 to 107 above, should be made and retained. It is for care providers to determine how long they wish to retain this type of record of regular maintenance and testing, but for the purposes of audit by the enforcing authority, records for a minimum period of two years should be available. Records which should be kept include the following:

- Testing and checking of escape routes, including exit locking mechanisms, such as panic bars, push pads and electromagnetic locking devices;
- Maintenance to means of escape (self-closing doors, stairways, corridors and essential structural features);
- Testing of fire alarm systems, including weekly alarm tests and periodic maintenance by a competent person;
- Records of false alarms generated by the fire alarm;
- 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 any automatic life safety fire suppression systems such as sprinklers;
- Staff instruction and training in fire safety and the evacuation procedure; and
- Fire drills.

Chapter 6: REDUCING THE RISK OF FIRE

111. This chapter provides further information which will assist in evaluating the risk of a fire and its prevention. A long-term workable and effective strategy should be developed to reduce hazards and the risk of a fire starting. At its simplest this means separating flammable materials from ignition sources. Advice under the following headings is given in this chapter:

- **Housekeeping and storage arrangements;**
- **Storage and use of dangerous substances;**
- **Safe use of equipment;**
- **Electrical;**
- **Smoking;**
- **Managing building work and alterations;**
- **Particular hazards in escape routes;**
- **Security; and**
- **Textiles, Furniture, Bedding and Sleepwear.**

Housekeeping and Storage

112. All reasonable provision should be made to reduce the possibility of fires occurring due to accidental ignition. Control of combustible materials should be achieved by attention to good housekeeping principles; this can reduce the likelihood of fire. Combustible materials are not just those generally regarded as highly combustible, but all materials that will readily catch fire. By carefully considering the type of material, the quantities kept and the storage arrangements, the risks can be significantly reduced. Some of the practices which should be followed are:

- The storage of equipment and packages should be in designated areas only and kept behind locked doors;
- Storage should not be permitted in plant rooms, service voids and shafts, electrical main or sub-switch rooms, or any other room or space containing a fixed source of ignition;
- Storage of combustible material should not be allowed in boiler rooms or other areas containing fixed sources of ignition;
- Storage of materials of a non-combustible nature may be stored in cupboards containing electrical distribution boards, provided the cupboard is fitted with a fire resisting door and kept locked shut when not in use;
- The stacking of linen, paper or plastic packaging in stores should be in an orderly manner;
- Storage of any description should not be permitted in escape stairs or corridors unless within a locked cupboard which is separated by fire resisting construction and with fire resisting doors, (see Technical Annexe 13.1 Fire Compartmentation);
- Storage of residents' smoking materials should be governed by an established smoking policy;
- The smoking policy should highlight that smoking is not permitted in or adjacent to storage areas containing combustible materials;
- Regular checks and cleaning should be carried out to prevent the accumulation of rubbish in "out of sight" spaces, such as plant rooms, service voids and shafts, basements, dead-end corridors and behind radiators;
- There should be control and frequent disposal of packaging, waste and other combustible rubbish, and storage external to the building should be well away from external walls or overhanging eaves;
- Attic spaces should not be used for the storage of items which are combustible; and
- Storage of excess materials should be in a dedicated storage area, storeroom or cupboard.

113. Additionally, in the case of residential care premises for children:

- The care and cleaning of any soft toys should be in accordance with the manufacturer's instructions in order to maintain the required flame retardancy;
- Any soft toys donated to the home should be checked to ensure that they maintain the required flame retardancy. (Only new toys or those which display the appropriate safety labelling are recommended.)

Storage and Use of Dangerous Substances

114. 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*. Specific precautions are required when handling and storing these to minimise the possibility of an incident. 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.

115. The supplier should be able to provide detailed advice on safe storage and handling of substances, however, the following principles will help reduce the risk from fire:

- Avoid the use of highly flammable materials and liquids wherever possible or substitute highly flammable substances and materials with less flammable ones;
- Reduce the quantity of dangerous substances to the smallest reasonable amount necessary for use;
- Correctly store dangerous substances, for example in a fire-resisting enclosure. All flammable liquids and gases should ideally be locked away to reduce the chance of them being involved in a fire or used in deliberate ignition; and
- Ensure that all staff are aware of the fire risk of dangerous substances present and the precautions necessary to avoid danger.

116. **Aerosols** are liable to explode if involved in a fire, causing spread and intensification of fire and possibly damaging doors such that they fail to function in restricting the spread of fire and smoke. These potential consequences must be taken into account and appropriate storage and disposal arrangements put into place for aerosols, taking into account the quantities involved and manufacturers' instructions. Storage should be away from escape routes and no storage should be allowed in boiler houses or other areas containing fixed sources of ignition such as electrical distribution boards in cupboards.

117. **Highly flammable liquids** present a particularly high fire risk. For example, a leak from a container of flammable liquid may produce large quantities of heavier-than-air flammable vapours. These vapours 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 and that materials contaminated with flammables are properly disposed of.

118. Under normal circumstances, **Liquefied Petroleum Gas (LPG)** cylinders or cartridges should be stored and used in the open air outside the building. Particular care must be taken to minimise the possibility of involvement in a fire. Where in exceptional circumstances LPG cylinders are used indoors, such as due to failure of normal heating, only Butane should be used (Propane may be necessary for building work). Cylinders and cartridges should be kept upright 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. They should not be beside any heat, source of ignition or readily ignitable material. No cylinders should be in basements or cellars without floor level ventilation. Further guidance on the safe storage of LPG is available from the supplier or the Liquefied Petroleum Gas Association.

Safe Use of Equipment

I19. Lack of preventative maintenance increases the risk of fire starting in equipment. Common causes of fire in equipment are:

- Inadequate cleaning of equipment such as tumble driers;
- Allowing extraction equipment in kitchens to build up excessive grease deposits; and
- Disabling or interfering with automatic or manual safety features and cut-outs.

I20. A competent person should adequately and regularly maintain machinery, equipment and plant, including cooking and heating equipment and office equipment such as photocopiers.

I21. Individual heaters where provided, should be fixed in position, installed and guarded and used in accordance with the manufacturers' instructions. LPG naked flame, portable gas or exposed element heaters should not be used.

I22. Smoking should not be allowed where **medical oxygen** is used or stored and there should be suitable instruction and warning signs. Oxygen cylinders should preferably be stored in a secure outdoor location. If kept indoors, they should not be in corridors, stairways or exit doors or beside any fires, naked lights, oils or grease.

Electrical

I23. Electrical equipment is a significant cause of accidental fires, the main causes are:

- Overheating cables and equipment due to overloading or loose connections;
- Incorrect installation or use of equipment;
- Damaged or inadequate insulation on cables or wiring;
- Combustible materials being placed close to electrical equipment which may give off heat. (Heat may be generated when equipment is operating normally or when equipment becomes hot due to a fault or inadequate ventilation); and
- Arcing or sparking by electrical equipment.

I24. All electrical equipment should be installed and maintained in a safe manner by a competent person. If there is any doubt about the safety of electrical installations, consult a competent electrician. Where portable electrical equipment is used, including items brought into the premises by staff, then the potential for defects can be reduced if it undergoes portable appliance testing at suitable intervals.

I25. An effective programme of planned preventative maintenance for all fixed installations and portable appliances should be implemented for the premises, with an agreed procedure for reporting faults. Once reported, action should be taken to repair any faults as quickly as possible or otherwise ensure that the equipment is made safe:

- Instruction should be available for all equipment;
- Only correctly fused extension leads should be used and positioned to avoid a tripping hazard;
- The use of multi adaptors should be discouraged;
- Electric blankets should be maintained and serviced in accordance with the manufacturers' guidance;
- Ensure correct wiring of plugs; and
- Electrical equipment should only be used for its intended purpose.

Smoking

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

127. In each case, premises should have a clearly defined smoking policy. Where smoking is permitted in designated areas, a sufficient number of suitably placed ashtrays should be provided. Ashtrays should be emptied at least daily into a metal container and taken outside. Ashtrays should not be emptied into plastic waste bags which are then left inside for disposal later. Inspections of smoking areas should be made at regular intervals with staff being vigilant for any sign of scorch marks or burning and to ensure that smokers' materials which have been discarded are removed and that they will not ignite other materials.

Managing Building Work and Alterations

128. Fires often occur when buildings are undergoing refurbishment or alteration, therefore before any building work starts, the fire safety risk assessment should be reviewed and additional risks likely to be introduced, considered and evaluated. Lack of pre-planning can lead to haphazard co-ordination of fire safety measures.

129. The impact of the building work on the general fire safety measures should be continuously monitored. Only allow the minimum materials necessary for the work in hand within or adjacent to the building. Additional hazards associated with building work can include:

- Hot work such as soldering, roof repair and paint stripping;
- Use of temporary electrical equipment;
- Blocking or obstruction of escape routes including external escape routes;
- Loss of normal storage facilities;
- Fire safety equipment, such as automatic fire detectors becoming affected;
- Fire-resisting partitions being breached or fire-resisting doors being wedged open; and
- Increased risk from quantities of combustible materials and accumulated waste.

130. The content of skips or refuse containers may be subject to deliberate ignition; these containers should not be sited against or close to a building; they should normally be a minimum of 6m away.

Particular Hazards in Escape Routes

131. If a fire were to occur in an escape route or spread to material in the escape route, this would be a particularly difficult and threatening situation preventing occupants from escaping. 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 not be located on any corridor or stairway that will be used as an escape route (reduction in escape route width may also be an issue). Such items include:

- Portable heaters, such as LPG or electric radiant heaters and electric convectors or boilers;
- Gas cylinders for supplying heaters;
- Cooking appliances;
- Bath chairs and wheel chairs;
- Upholstered furniture;
- Coat racks;
- Vending machines;
- Gas pipes, meters, and similar fittings; and
- Electrical equipment, such as photocopiers.

Security

I32. The possibility of deliberate fire raising should be considered as a component of the fire safety risk assessment particularly in areas with a known history of vandalism or fire-setting. Appropriate security measures, including the protection of stored materials, the efficient and prompt removal of rubbish and security against unauthorised entry or access, can therefore do much to alleviate this particular problem.

I33. In some residential care premises there may be a need to protect some residents from harm where there is a risk from falls or wandering off. In this case, and in the case of security against unauthorised entry, it is important that security or safeguarding measures do not compromise the operation of the emergency fire action plan or potential Fire and Rescue Service operations.

Furniture, Textiles, Bedding and Sleepwear

I34. In a high proportion of fires in residential care premises, the material first ignited is textiles or furnishings. The choice of furniture, textiles, bedding and sleepwear can influence the risk of ignition and growth of a fire. Where possible, those items which are supplied in premises providing residential care should meet the benchmarks in Technical Annex 13.13. Where possible, bedding and sleepwear provided by residents should achieve the same benchmarks. All furniture and textiles should carry an indication identifying the fire performance or test classification.

I35. If residents are allowed to provide textiles or furniture which does not meet these benchmarks, this should only be accepted for their own bedroom and only where the bedroom is not shared with other residents.

Chapter 7: RESTRICTING THE SPREAD OF FIRE AND SMOKE

I36. To reduce the risk to persons if there is a fire, it is necessary 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. To evaluate the risk to people in premises requires a basic appreciation of the way fires grow and how smoke and poisonous gases can spread through a building. A fire in a building is likely to generate smoke that is thick and black, obscures vision, causes great difficulty in breathing, and can block the escape routes. This smoke is a serious threat to life which should not be underestimated.

I37. Fire is spread by three methods:

- Convection.
- Conduction.
- Radiation.

I38. Fire and smoke spread by **convection** is the most dangerous and causes the major proportion of injuries and deaths. When fire starts in an enclosed space such as a building, the smoke rising from the fire becomes 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.

I39. Some materials, such as metal can absorb heat readily and transmit it to other rooms by **conduction**, where it can set fire to combustible items that are in contact with the heated material. **Radiation** transfers heat in the air in the same way that 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.

I40. In this chapter, restricting the spread of fire is considered under the headings of:

- **Fire Compartmentation;**
- **Doors;**
- **Fire Separation;**
- **Fire Spread through Cavities;**
- **Fire Spread on Internal Linings;**
- **Fire Spread on External Walls; and**
- **Fire Spread from Neighbouring Buildings.**

I41. The protection of fire spread into escape routes is covered in Chapter 8.

Fire Compartmentation

I42. Where residents are dependent on staff assistance in the event of a fire and the evacuation strategy is progressive evacuation, the building should be divided into different fire resisting compartments by fire-resisting doors, walls and floors. This restricts the number of residents who would be at immediate risk in the event of a fire occurring and allows their progressive evacuation to an adjoining compartment.

I43. The provision of compartments, sub-compartments and the enclosure of fire hazard rooms will provide a physical barrier to a fire. When combined with a limitation on the number of residents' beds in any sub compartment additional time for staff and residents to evacuate is provided.

I44. Technical Annexe 13.1 contains benchmarks against which existing provision can be compared.

Doors

145. A closed door may restrict fire spread by holding back fire and smoke. A 'fire door' is a fire resisting door which is rated by performance to fire when tested to an appropriate standard. Fire doors are an essential part of a fire compartment and for the protection of means of escape. A self closing device is a normal feature of a fire door other than for some doors such as cupboards which are kept locked when not in use.

146. Technical Annexe 13.7 contains guidance and benchmarks against which existing provision can be compared.

Fire Separation

147. Where the residential care premises adjoins or is part of a larger building, such as where it is semi-detached or in a terrace, the risk of an outbreak of fire in the neighbouring building ultimately spreading to the premises should be considered. The provision of fire separation will ensure that in the event of an outbreak of fire within the building, fire and smoke is inhibited from spreading beyond the area of occupation where the fire originated.

148. Technical Annexe 13.2 contains benchmarks against which existing provision can be compared.

Fire Spread Through Cavities

149. A cavity is a concealed space enclosed by elements of a building or contained within a building element. The unseen spread of fire and smoke within concealed spaces in the structure and fabric could pose a serious risk to occupants, particularly those with high dependency.

150. The premises should be examined to see if there are any easy paths through which smoke and fire may spread. Many buildings will have void areas, possibly hidden from view, which will allow smoke and fire to spread away from its source. It will be necessary to consider the provision of cavity barriers to restrict the spread of fire in the following:

- vertical shafts and dumb waiters;
- false ceilings, especially if walls do not continue above the ceiling;
- voids behind wall panelling;
- unsealed holes in walls and ceilings where pipe work, cables or other services have been installed;
- a roof space or attic; and
- a service riser or any other space used to run services around the building.

151. In particular, certain types of buildings which are of a modular construction have hidden voids through which fire may spread. In this type of building it is important that an appropriate assessment is carried out and cavity barriers that restrict the spread of fire are installed if appropriate, especially to walls and floors that need to be fire resisting.

152. Technical Annexe 13.3 contains benchmarks against which existing provision can be compared.

Fire Spread on Internal Linings

153. Materials used on the surfaces of walls and ceilings can significantly affect the spread of fire and its rate of growth. The potential for fire spread on internal linings in escape routes is particularly important as rapid fire spread could prevent occupants from escaping. The internal linings of residential care premises should be such that in the event of an outbreak of fire within the building, the development of fire and smoke from the surfaces of walls and ceilings within the area of origin is inhibited.

154. Surface finishes (this includes any decorative wallpaper or paints, applied to the face of a wall or ceiling) can increase flame spread and fire growth rate. For this reason, multiple layers should be avoided when re-decorating wall and ceiling surfaces.

155. Technical Annexe 13.4 contains benchmarks against which existing provision can be compared.

Fire Spread on External Walls

156. If there is combustible external wall cladding, such as timber, it will be necessary to consider the potential for an outbreak of fire within the building, or from an external source, to spread externally and pose a risk where there are high dependency residents and extended evacuation times.

Fire Spread from Neighbouring Buildings

157. An assessment should be made to what extent a fire may spread to the premises from a neighbouring building or structure and whether this could pose a hazard to occupants. The results of the assessment should then be considered and appropriate fire safety measures put in place.

158. The Technical Annexes which are relevant to this chapter are:

- Technical Annexe 13.1 Fire Compartmentation
- Technical Annexe 13.2 Fire Separation
- Technical Annexe 13.3 Fire Spread through Cavities
- Technical Annexe 13.4 Fire Spread on Internal Linings
- Technical Annexe 13.7 Doors

Chapter 8: MEANS OF ESCAPE

159. Once a fire has started, been detected and a warning given, everyone in the residential care premises should be able to move or be assisted in movement away from the fire, to a place of reasonable safety such as a protected stair or other compartment. From there they should be able to escape to a safe area beyond the premises before being affected by fire or smoke. Sufficient means of escape should be provided for persons using the premises, both in terms of the number of escape routes and capacity and in terms of protection by enclosure from fire and smoke. In determining the appropriateness of means of escape, account must be taken of the nature of the residents.

160. Structural fire protection should also be considered to ensure that in the event of an outbreak of fire within the building, the load-bearing capacity of the building will continue to function until all occupants have escaped, or been assisted to escape, from the building.

161. The level of provision of means of escape and the fire protection that should be given to an escape route will vary depending on the level of risk within the premises and the dependency of residents. In most cases there should be at least two exits and independent escape routes from each storey of the premises. This will prevent a fire affecting more than one escape route at the same time. When determining whether premises have adequate escape routes, a number of interdependent factors should be considered, these are:

- The dependency and number of people in the premises;
- The method of moving high dependency residents;
- The time it will take people to escape;
- The construction of the premises and potential for fire and smoke spread; and
- The fire compartmentation of the premises (see chapter 7).

162. The people present in residential care premises will primarily be residents and staff and they will have been considered during the fire safety risk assessment. The escape time available will depend on a number of factors, including the number of escape routes available, the travel distance to be covered, the nature of the occupants, staff availability and the speed of fire growth.

163. Where there is a mix of residents with different dependencies, it may be appropriate to locate the high and medium dependency residents in rooms which offer the least difficulty for evacuation, possibly on the ground floor.

164. The Technical Annexes which are relevant to this chapter are:

- Technical Annex 13.5 Structural Fire Protection
- Technical Annex 13.6 Escape
- Technical Annex 13.7 Doors

Chapter 9: ENSURING THAT MEANS OF ESCAPE CAN BE USED

165. Means of escape and protected escape routes should be provided with effective lighting to allow persons to safely use these routes in the event of a fire occurring or in the event of failure of the normal lighting power supply. Signs and notices should be provided to help people identify escape routes, find fire-fighting equipment, or to provide specific information or warning about particular equipment, doors, rooms or procedures.

166. This chapter considers:

- **Escape route lighting;**
- **Emergency lighting;**
- **Signs; and**
- **Notices**

Escape route lighting

167. The premises should be provided with escape route lighting to the extent necessary to ensure that in the event of an outbreak of fire within the building, illumination is provided to assist in escape and to aid staff in implementing the emergency fire action plan.

Emergency lighting

168. Emergency lighting is lighting designed to come into, or remain in, operation automatically in the event of a local or general power failure. Emergency lighting will usually be provided on a wider scale to allow the normal functions of the premises to continue, in event of interruption to the mains supply.

169. The size and type of the premises and the risk to the occupants will determine the complexity of appropriate emergency lighting.

170. Technical Annex 13.8 contains benchmarks against which existing provision can be compared.

Signs

171. In small simple premises where the locations of escape routes and fire-fighting equipment are readily apparent and the fire-fighting equipment is visible at all times, then signs may not be necessary or a single sign indicating the alternative exit(s) might be all that is needed. In larger and more complex premises, a series of signs might be needed.

172. Where fire signs are provided, they should be sited in conspicuous positions. They should be recognisable, readable and informative, as they convey essential information to frequent and infrequent users of the premises. The visibility, illumination and height of display should be carefully considered. Fire signs should normally follow the guidance in British Standards. However, there may be occasions when it is more appropriate for signs to be specifically designed to the particular needs of the residents rather than follow standard formats.

Escape Route Signs

173. Exits not in normal use should be clearly indicated by signs. The legibility of an escape sign is determined by the size of the sign, the 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. Where the exit cannot be seen or where a person escaping may be in doubt about an escape route, signs with directional arrows should be provided along the route.

Other Safety Signs

174. Signs should be provided to indicate non-automatic fire safety equipment if there is any doubt about its location, such as fire extinguishers that are kept in cabinets or in recesses. A number of other signs may also be necessary such as:

- 'Fire door keep shut' or 'Fire door keep locked shut' on fire doors;
- How to operate the locking devices on doors;
- Location of sprinkler stop valve; and
- Not to use lift in event of fire.

175. All signs and notices should be illuminated to ensure they are conspicuous and legible.

176. Technical Annexe 13.9 contains further information and benchmarks against which existing provision can be compared.

Notices

177. Notices are used to provide 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.

178. Notices containing details of the emergency fire action plan specific to the residential care premises should be permanently displayed in appropriate positions throughout the building. A distinction should be made between notices that are designed for residents and visitors as opposed to those for staff. Notices giving full instruction for staff should also be displayed on staff notice boards.

179. The Technical Annexes which are relevant to this chapter are:

- Technical Annexe 13.6 Escape
- Technical Annexe 13.8 Escape Lighting
- Technical Annexe 13.9 Signs

Chapter 10: MEANS FOR DETECTING FIRE AND GIVING WARNING

180. It is essential that an outbreak of fire in residential care premises should be detected at an early stage so that the occupants are alerted and the emergency fire action plan can be implemented as soon as possible. The longer a fire continues undetected, the greater the risk to the safety of residents. There should also be a means so that anyone in the premises who discovers a fire, can alert others to the existence of the fire.

181. Residential care premises should be provided with a fire detection and warning system in the form of an electrical fire alarm system which can be operated either by a person or automatically by means of an automatic detector. The provision of suitable fire detection and warning equipment will only achieve compliance with requirements where the staff (and where appropriate other occupants) know how to operate the system and how to respond to system operation.

182. Some of the features of a fire alarm system will be:

- **Manual call points;**
- **Automatic fire detectors;**
- **Sounders and other warning devices;**
- **Control and indicator panel;**
- **Detection zoning; and**
- **Linked operation.**

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

184. **Automatic fire detectors** The choice of type depends on the nature of the hazard, the required speed of system response and the need to avoid false alarms. The common types of automatic fire detector are:

- **Heat detectors** operate when a fixed temperature is reached and may also have a sensor that responds to an abnormal rate of rise of temperature. Heat detectors have a good performance in respect of false alarms but are not appropriate in areas where the detection of the presence of smoke is required.
- **Smoke detectors** detect the presence of smoke using either an **ionisation** chamber or **optical** light scatter sensor. They give a speedier response to most fires than heat detectors but have greater potential to generate false alarms.
- **Combustion gas detectors** respond to gases produced in a fire such as Carbon Monoxide. They can be sensitive to smouldering fires, respond to many fires faster than heat detectors and have a good false alarm performance in the presence of dust, steam and cigarette smoke.
- **Multi-sensor detectors** can be used which combine heat and smoke or combustion gas detection. Combined sensors enhance system performance and have the potential for a reduction in false alarm actuations.

185. **Sounders** are provided to alert occupants. The type and extent of sounder will depend on the building layout and whether the fire alarm system is designed to rouse sleeping occupants. In some premises it may be the intent that the fire alarm system should not rouse those occupants who need assistance to evacuate. As an alternative to conventional sounders, a specially designed voice-alarm may be suitable for some premises.

186. Where there are residents or staff with hearing impairment to the extent that the fire alarm sounders cannot be perceived, then it will be necessary to consider whether there is a need to provide tactile and/or visual alarm devices for those persons.

187. The **control and indicator panel** provides the facility for indication of fire or fault signals and manual controls such as silencing and resetting. The fire alarm control and indicator panel should be sited at a location which is appropriate for staff use taking account of the fire and evacuation strategy that is adopted for the building.

188. When a fire alarm system operates, the source of the actuation should be quickly identifiable to allow staff to investigate the location. To achieve this, the building should be divided into **detection zones**. These zones should be influenced not by the physical installation of the fire alarm system but by compatibility with the emergency fire action plan. The existence of fire compartments should be considered and it may be that detection zones extending no further than a single fire compartment are appropriate.

189. Where the fire alarm system is zoned, a **schematic plan** showing the fire detection zones in a simple and unambiguous way should be displayed adjacent to the control panel to allow staff to quickly locate the source of a fire alarm actuation. Even in the case where an addressable system is installed, zone indication is also likely to be an essential feature. (An addressable fire alarm system is one where individual detectors and call points can be identified at the control and indicating equipment.)

Linked Operation

190. If a sprinkler system or other automatic life safety fire suppression system is installed in the building, this should be interlinked so that actuation of the suppression system in response to a fire should also cause operation of the fire alarm system.

191. Where there are self closing doors which are held in the open position by automatic release devices or are fitted with swing free arms, then the operation of the fire alarm should cause automatic closure of these doors and internal swing doors with automatic opening should have the automatic opening facility disabled.

Remote Monitoring

192. With remote monitoring, the actuation of the fire alarm will cause a signal to be transmitted automatically to a remote alarm receiving centre (ARC). On receipt of a signal, the ARC would then call the Fire and Rescue Service.

Reducing False Alarms

193. False alarms from automatic fire detection systems are a major problem which cause disruption to the running of premises and result in many unwanted calls to the Fire and Rescue Service. If there are frequent false alarms in the premises, people may become complacent and may not respond correctly to a warning in the event of a real fire. All false alarms should be investigated to determine the cause and prevent a recurrence.

194. Information on maintenance and testing of fire alarm systems is contained in chapter 5.

195. Technical Annexe 13.10 contains further information and benchmarks for fire alarm systems against which existing provision can be compared.

Chapter 11: MEANS FOR FIGHTING FIRE

196. A small fire tackled with fire-fighting equipment in the early stages may be prevented from developing into a fire of life-threatening proportions. Fire-fighting equipment can fall into one of two categories; either (a) it is designed for use by persons, such as portable fire extinguishers and hose reels or (b) it is a fixed installation, such as a sprinkler system which comes into operation automatically in the event of fire.

Fire Fighting Equipment for Use by Persons

197. Portable fire fighting equipment should be provided in residential care premises for staff use. Fire-fighting equipment can be used to prevent a small fire, such as 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 people in the premises. Fire extinguishers, in association with staff trained to use them, are an essential element in the measures to reduce the risk to people from fire, particularly where residents have high or medium dependency.

198. For the purpose of selecting fire extinguishers, fires generated by different materials can be classified as in the following table.

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: For class C and D fires, specialist advice is required.

Table. Class of fire

199. A **Water Extinguisher (Red body)** can only be used on Class A fires. It allows 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 because water is a conductor of electricity.

200. A **Water Extinguisher with Additives (Red body)** is suitable for Class A fires and can also be suitable for use on Class B fires and where appropriate, this will be indicated on the extinguisher. This type is generally more efficient than conventional water extinguishers.

201. A **Foam Extinguisher (Red body with cream label)** can be used on Class A or B fires and is particularly suited to extinguishing liquid fires. It 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.

202. A **Powder Extinguisher (Red body with blue label)** can be used on most classes of fire and achieve a good 'knock down' of the fire. It can be used on fires involving electrical equipment but may damage the equipment. However, since powder does not cool a fire appreciably, there is the potential for the fire to re-ignite.

203. A **Carbon Dioxide (CO₂) Extinguisher (Red body with black label)** can be used on class B fires and is particularly suitable for fires involving electrical equipment as it is a non conductor. As with all fires involving electrical equipment, the power should be disconnected if possible. The loud noise accompanying discharge and the freezing effect on the discharge horn of this extinguisher can startle operators so that they drop the extinguisher.

204. A **Class 'F' extinguisher (Red with canary yellow label)** is particularly suitable for commercial catering establishments with deep-fat fryers.

205. In small premises, having one or two **portable fire extinguishers** of the appropriate type, readily available for use, may be all that is necessary. In larger, more complex premises, more extinguishers will be required. Extinguishers should be easily accessible and simple to use. It may also be necessary to indicate the location of extinguishers by suitable signs.

206. People with no training should not be expected to attempt to extinguish a fire. There should therefore be suitable training in place that will enable staff in the premises to safely use the fire-fighting equipment provided. (See chapter 5)

207. Technical Annexe 13.11 contains further information on portable fire extinguishers and benchmarks against which existing provision can be compared.

208. Permanent **hose reels** provide an effective fire-fighting facility; they are fixed units permanently connected to a water supply. They may offer an alternative, or be in addition, to portable fire extinguishers. Where there is the potential for small fires in containers of cooking oil or fat then a light duty **fire blanket** is appropriate.

Automatic Life Safety Fire Suppression Systems

209. An automatic life safety fire suppression system may be an automatic sprinkler system or an equivalent system. Sprinklers 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. Automatic life safety fire sprinkler systems operate automatically on detection of an outbreak of fire within the building to inhibit the spread of fire. Water is discharged from the individual sprinkler head which has detected heat from the fire, other sprinkler heads remain closed.

210. An automatic life safety fire suppression system can be very effective in controlling a fire. It may limit fire growth and extend the time taken for untenable conditions to develop, giving more time to evacuate residents, particularly in cases where the standard of fire compartmentation, structural fire protection, fire spread on internal linings or travel distance may be a concern.

211. In residential care buildings (as defined in regulation 2 of the *Building (Scotland) Regulations 2004*) where building warrant approval was granted after 1st May 2005 in respect of new or altered premises, automatic life safety fire suppression systems will be provided to comply with Building Regulations.

212. Benchmarks for sprinklers are contained in Technical Annexe 13.12.

213. The Technical Annexes which are relevant to this chapter are:

Technical Annexe 13.9 Signs

Technical Annexe 13.11 Portable fire extinguishers

Technical Annexe 13.12 Automatic life safety fire suppression systems

Chapter 12: FIRE AND RESCUE SERVICE FACILITIES

214. Building Regulations and other legislation may have required premises to have facilities, equipment and devices provided for use by, or protection of, fire-fighters. Fire safety law includes a duty requiring suitable maintenance of such features to keep them in good order. Examples of such facilities are given below.

Fire and Rescue Service Access

215. Buildings that have been constructed to Building Regulations will have been provided with facilities that allow Fire and Rescue Service vehicles to approach and park within a reasonable distance so that fire-fighters can use their equipment without too much difficulty. These facilities may consist of access roads to the building, hard-standing areas for Fire and Rescue Service vehicles and access into the building for fire-fighters. Where such facilities are provided access should be maintained and available for use at all times.

Water Supply for Fire and Rescue Service Use

216. External water hydrants provide a water supply for use by the Fire and Rescue Service. Where no piped water supply is available, or there is insufficient pressure and flow in the water main an alternative supply may have been provided such as a water tank, or access provided to a spring, river, canal, loch or pond, to which a hard standing is available for Fire and Rescue Service vehicles. In some cases, water supplies may be under the control of the care provider.

Smoke Ventilation

217. Smoke ventilators or outlets may be provided for the specific purpose of assisting Fire and Rescue Service personnel with smoke control and clearance. These may be located in basement storeys and stairs and may be openable windows.

Other Systems

218. There are other features which may occasionally be found in premises such as:

- Rising mains which comprise fixed pipework in a building with connections suitable for Fire and Rescue Service hose connection.
- Information arrangements for fire-fighters.
- Fire-fighters' switches for electrical luminous tube signs.

TECHNICAL ANNEXES

The following pages set out more information about fire safety measures. Benchmarks are offered to assist with assessing the adequacy of existing fire safety measures. Where existing fire safety measures fall below these benchmarks, then consideration should be given during the fire safety risk assessment as to whether there is a need to upgrade.

There are 13 Technical Annexes:

- 13.1 Fire Compartmentation
- 13.2 Fire Separation
- 13.3 Fire Spread through Cavities
- 13.4 Fire Spread on Internal Linings
- 13.5 Structural Fire Protection
- 13.6 Escape
- 13.7 Doors
- 13.8 Escape Lighting
- 13.9 Signs
- 13.10 Fire Alarm Systems
- 13.11 Portable Fire Extinguishers
- 13.12 Automatic Life Safety Fire Suppression Systems
- 13.13 Furniture, Textiles, Bedding and Sleepwear

Fire Compartmentation

This Technical Annexe contains benchmarks in respect of Compartmentation to restrict the spread of fire, against which the existing level of provision can be compared.

The level of provision in this benchmark is consistent with the Technical Handbook for compliance with Scottish Building Regulations.

1. Residential care premises with a total storey area of more than 1500m² should be sub divided by compartment walls and fire doors with a medium duration (60 minutes) fire resistance. Every compartment should be limited to a maximum area of 1500m². In addition, every upper storey and every basement storey should form a separate compartment. Every floor should be a compartment floor with a medium duration (60 minutes) fire resistance. In premises with only medium and/or low dependency residents, the compartment walls and floors need only have short duration (30 minutes) fire resistance, provided the compartment size does not exceed 1500m².
2. Every compartment should be divided into at least two sub-compartments by a sub-compartment wall with a short duration (30 minutes) fire resistance so that each sub-compartment is not greater than 750m².
3. In order to contain a fire in its early stages, the following rooms are considered to be fire hazard rooms and should be enclosed by walls with a short duration (30 minutes) fire resistance:
 - Chemical stores;
 - Cleaners' rooms;
 - Clothes storage;
 - Day rooms with a floor area greater than 20m²;
 - Smoking rooms;
 - Disposal rooms;
 - Lift motor rooms;
 - Linen stores;
 - Bedrooms;
 - Kitchens;
 - Laundry rooms;
 - Staff changing and locker rooms; and
 - Store rooms.
4. Where a lower roof abuts an external wall, the roof should provide a medium duration (60 minutes) fire resistance for a distance of at least 3m from the wall. Where a compartment wall, sub-compartment wall or protected shaft abuts an external wall, a 1m wide projection of external wall having the requisite period of fire resistance should be provided to prevent lateral fire spread. This does not apply to separate compartments where both are fitted with an automatic sprinkler system.
5. Unless provided within a stair enclosure, a **lift** should be enclosed by compartment walls with a medium duration (60 minutes) fire resistance and, where the lift well is not the full height of the building, a compartment floor/ceiling with a medium duration (60 minutes) fire resistance. A compartment wall is not needed between a lift well and a protected zone. Where a lift is installed, the landing controls and lift car controls should be of a type that do not operate on heat or pressure resulting from a fire. Lift wells should be provided with permanent ventilation of 0.1m.

6. Where an element of structure provides support to a compartment wall or compartment floor which attracts a higher fire resistance duration, the supporting element of structure should have at least the same period of fire resistance.
7. Where services pass through a compartment floor, wall or cavity barrier then fire stopping should be provided to a medium duration (60 minutes) fire resistance. PVC pipes having a diameter in excess of 40 mm should be fitted with a proprietary sealing system capable of maintaining the fire resistance of the floor, wall or cavity barrier.
8. Any door in a compartment wall should be a self-closing fire door with the same fire resistance duration as the wall. See also Technical Annex 13.7.
9. **Action recommended where these benchmarks are not met:**
 - a. Where short duration compartmentation is not achieved then consider upgrade to benchmark.
 - b. Where there are high dependency residents and compartmentation is only short duration then consider upgrade to benchmark or consider provision of an automatic life safety fire suppression system throughout.

Fire Separation

This Technical Annexe contains benchmarks in respect of Separation to restrict the spread of fire, against which the existing level of provision can be compared.

The level of provision in this benchmark is consistent with the Technical Handbook for compliance with Scottish Building Regulations.

1. A separating wall or separating floor should be provided between parts of a building where they are in different occupation. Separating walls and separating floors should have a medium duration (60 minutes) fire resistance. There should be no openings and doors should not be installed in separating walls.
2. Every part of a separating wall or separating floor should be of materials that are non combustible. The wall should contain no pipes, wires or other services within the wall.
3. **Action recommended where the benchmarks are not met:**

Consider upgrade to benchmark to achieve fire resistance. In older premises, non-combustibility may not be achievable.

Fire Spread through Cavities

This Technical Annexe contains benchmarks in respect of restriction of spread of fire and smoke within concealed spaces in the structure and fabric of the building, against which the existing level of provision can be compared.

The level of provision in this benchmark is consistent with the Technical Handbook for compliance with Scottish Building Regulations.

1. In order to inhibit fire spread in a cavity, every cavity within a building should have cavity barriers with at least a short duration (30 minutes) fire resistance installed around the edges of the cavity. This includes for example, around the head, jambs and cill of an external door or window opening. A cavity barrier should also be installed between a roof space and any other roof space or between a cavity and any other cavity such as at the wall-head between a wall cavity and a roof space cavity.
2. Every cavity should also be divided by cavity barriers so that the maximum distance between cavity barriers is not more than 20m (10m where the cavity has surfaces which are Class 1 or higher: see Technical Annexe 13.4 Fire Spread on Internal Linings). Cavity barriers should be measured horizontally or vertically, as the case may be, along the centre line of the cavity and not diagonally.
3. Cavity barriers are not necessary to divide a cavity:
 - Formed by 2 leaves of masonry or concrete at least 75mm thick, or where cavities are closed at the top and around openings; or
 - Below a floor next to the ground where the cavity is either inaccessible or is not more than 1m high; or
 - Formed by external wall or roof cladding, where the inner, outer or other exposed surfaces of the cladding are Class 0 or lower (see Technical Annexe 13.4) attached to a masonry or concrete external wall or a concrete roof, and where the cavity contains only non-combustible material.
4. Reference to surfaces in a cavity is intended to include the surface of the enclosing envelope of the cavity (including insulation material) but excludes timber roof trusses or lintels, joist ends, pipes, conduits or cables.
5. A cavity barrier should be fixed so that its performance is not affected by:
 - Movement of the building due to subsidence, shrinkage or thermal collapse in a fire of any services penetrating it; or
 - Failure in a fire of its fixings; or
 - Failure in a fire of any material or element of structure to which it abuts.
6. All cavity barriers should be tightly fitted to rigid construction. Where this is not possible as in the case of a junction with slates, tiles, corrugated sheeting or similar materials, the junction should be fire-stopped.
7. **Action recommended where the benchmarks are not met:**

Consider upgrade to benchmark.

Fire Spread on Internal Linings

This Technical Annexe contains benchmarks in respect of linings to restrict the development of fire and smoke from the surfaces of walls and ceilings within the area of origin, against which the existing level of provision can be compared.

The level of provision in this benchmark is consistent with the Technical Handbook for compliance with Scottish Building Regulations.

1. The wall and ceiling surfaces of internal linings should have a reaction to fire no lower than that shown in the following table:

Dependency of the residents	Surface	Rooms not more than 4m ² (class)	Rooms 4m ² to 30m ² (class)	Rooms more than 30m ² (class)	Protected zones & unprotected zones* (class)
High	walls	2	1	0	0
	ceilings	2	1	1	0
Medium	walls	2	2	1	0
	ceilings	2	2	2	0
Low	walls	2	2	2	1
	ceilings	2	2	2	1

* includes any toilet or washroom within a protected zone

Table. Surface linings by reference to use by residents.

Class description:

0 means the surface material or where it is bonded throughout to a substrate, the surface material combined with the substrate has a surface of Class 1 and, when tested in accordance with BS 476: Part 6: 1981 or BS 476: Part 6: 1989 has an index of performance (I) not more than 12 and a sub-index (i₁) not more than 6 or has achieved a classification of B-s3, d2 or better when tested in accordance with BS EN 13823 and BS EN ISO: 11925-2.

Materials which may fall into this category 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.

1 means the material when tested to BS 476: Part 7: 1987 (1993) attains a Class 1 surface spread of flame or has achieved a classification of C-s3, d2 or better when tested in accordance with BS EN: 13823 and BS EN ISO: 11925-2.

Materials which may fall into this category are timber, hardboard, blockboard and particle board, where, in each case, they are flame-retardant treated.

2/3 means the material when tested to BS 476: Part 7:1987 (1993) attains a Class 2 or Class 3 surface spread of flame or has achieved a classification of D-s3, d2 or better when tested in accordance with BS EN 13823 and BS EN ISO: 11925-2.

Materials which may fall into this category include, timber, hardboard, blockboard, particle board, heavy flock wallpapers and certain dense timber or plywood.

2. Additional finishes to surfaces may be detrimental to the fire performance of the surface. Wall and ceiling surfaces mean the substrate or lining material including any treatment thereof to restrict flame spread, but exclude any decorative wallpaper or paints. Multiple layers of wallpaper or paint applied to the face of a wall or ceiling surface can increase flame spread and hence the fire growth rate. For this reason, multiple layers are not recommended when carrying out refurbishment work involving the re-decoration of wall and ceiling surfaces.
3. In a room, any part of the wall may be of one category higher than that recommended in the table above, but not higher than Class 2/3 where the total area of those parts in any one room is not more than half the floor area of the room (subject to a maximum of 20m²).
4. The following **wall surfaces** should be taken into account in the assessment:
 - Glazing, except glazing in doors; and
 - Any part of a ceiling which slopes at an angle of more than 70° to the horizontal.
5. The following surfaces need not be taken into account:
 - Doors and door frames;
 - Window frames and frames in which glazing is fitted;
 - Skirting and facings, cover moulds, picture rails, and similar narrow members; and
 - Fireplace surrounds, mantle shelves and fitted furniture.
6. The following **ceiling surfaces** should be taken into account in the assessment:
 - The surface of glazing; and
 - Any part of a wall which slopes at an angle of 70° or less to the horizontal.
7. The following surfaces need not be taken into account:
 - Ceiling hatches and their frames;
 - The frames of windows or roof lights and the frames in which glazing is fitted; and
 - Facings, cover moulds, picture rails, and similar narrow members.
8. **Action recommended where the benchmarks are not met:**

Consider upgrade to benchmark or consider installation of an automatic life safety fire suppression system as a compensatory measure.

Structural Fire Protection

This Technical Annexe contains benchmarks in respect of structural fire protection, against which the existing level of provision can be compared.

The level of provision in this benchmark is consistent with the Technical Handbook for compliance with Scottish Building Regulations.

1. In residential care premises with some high dependency residents, all elements of structure (structural frames, load-bearing elements, and floors) should have a medium duration (60 minutes) fire resistance.
2. In residential care premises with some medium dependency residents, short duration (30 minutes) fire resistance is appropriate where there are no residents sleeping above the ground floor.
3. In residential care premises with only low dependency residents, short duration (30 minutes) fire resistance is appropriate.
4. A roof structure should not be considered as an element of structure unless the roof provides support to an element of structure or which performs the function of a floor.
5. An element of structure in a single-storey building which does not form part of, or provide support to, a separating wall, compartment wall, a sub-compartment wall, a wall or screen used to protect routes of escape or an external wall which attracts a fire resistance, need not be provided with any fire resistance for structural protection.
6. Where an element of structure provides support to another element of structure which is required to be non-combustible the supporting element of structure should also be constructed from materials which are non-combustible.
7. Where an element of structure provides support to another element of structure which attracts a higher period of fire resistance, the supporting element of structure should have at least the same period of fire resistance.
8. **Action recommended where the benchmarks are not met:**
 - Where there are only low dependency residents, consider upgrade to benchmark.
 - Where there are some medium dependency residents:
 - a. consider the need to upgrade to benchmark, or
 - b. where only short duration fire resistance is achieved and the medium dependency residents sleep above the ground floor, consider the provision of an automatic life safety fire suppression system as a compensatory measure.
 - Where there are some high dependency residents:
 - a. consider upgrade to benchmark; or
 - b. where only short duration fire resistance is achieved and the high dependency residents do not sleep above the ground floor, consider the provision of sprinklers as a compensatory measure.

Escape

This Technical Annexe contains benchmarks in respect of Escape, against which the existing level of provision can be compared.

The level of provision in this benchmark is consistent with the Technical Handbook for compliance with Scottish Building Regulations.

1. Where there is reference in this annexe to fire doors, see also 'Fire Doors' in Technical Annexe 13.7.

Travel Distance

2. Travel distance is the distance measured along the actual route of escape (having regard to the layout of furniture and fittings) from any point within a storey to the nearest protected door giving direct access to either:

- Another sub-compartment; or
- Another compartment; or
- A protected zone; or
- A final exit.

3. Where the travel distance is measured to a protected door in the wall of a compartment or sub-compartment, the escape route should not pass through a fire hazard room.

4. Where a compartment or sub-compartment does not contain either a final exit or direct access to a protected zone, then each of the adjoining compartments, or sub-compartments as appropriate, should contain either a final exit or direct access to a protected zone.

5. **Single direction of escape** is escape before there is the choice of escape routes, and it may mean moving towards or past the fire, if the fire occurs between the occupant and the choice of escape routes. This includes escape from the room of origin of a fire and any horizontal travel distance prior to the choice of escape routes.

6. The assessment of travel distance should be made by reference to the following table:

Single direction distance (m)	Maximum travel distance (m)*	Category of resident
9	18	High dependency
12	25	(a) High dependency and where sprinklers or equivalent are provided as compensatory feature (b) Medium dependency
15	32	(a) Medium dependency and where sprinklers or equivalent are provided as compensatory feature (b) Low dependency

* this includes single direction distance.

Table. Travel distance by reference to residents and sprinkler provision.

7. Where a measurement of travel distance includes an internal escape stair not in a protected zone, the travel distance should be measured along the pitch line from the centre of the nosing of the topmost tread to the lower landing, including the length of any intermediate landings.

Inner rooms

8. An inner room is a room where access to a circulation route can only be achieved by passing through another room. The following conditions should apply:

- An inner room should not be a bedroom;
- The access room to the inner room should not be a fire hazard room; and
- The maximum travel distance for single direction of escape from any point in the inner room should not exceed 9m.

Room occupancy

9. No room intended for sleeping should be used by more than 4 people.

Escape Routes

10. Each storey should have a minimum of two exits.

11. Any room with an occupant capacity of more than 60 should have at least two exits. Where more than one exit from a room is required, the directions of travel from any point within the storey or from any point within the room should:

- Diverge at an angle of at least 45°; or
- Be combined for a distance of not more than 9m and then diverge to two exits at an angle of at least 45° plus 2½° for every metre travelled in one direction.

12. An escape route should give access to a safe area beyond the building or to another compartment:

- Directly; or
- By way of a protected zone or unprotected zone; or
- By way of an unprotected zone to a protected zone; or
- By way of a flat roof or access deck (**only suitable for staff use**); or
- By way of an exit to an external escape stair (**only suitable for staff use**); or
- In the case of escape from an inner room not intended to be used as sleeping accommodation, by way of one other room, other than a place of special fire risk.

13. An escape route should not be by way of a lift, unless the lift has been installed in accordance with BS 5588 Part 8. 1999 which is primarily for the evacuation of the disabled.

14. An escape route and circulation area should have clear headroom of at least 2m. In a doorway it may be reduced to not less than 1.9m.

15. The unobstructed width of each individual escape route from a room or storey should be at least 1200mm. However where the room or storey is only used by low dependency residents, the width may be reduced to not less than 1000mm. Doorways can reduce the width of escape routes by 150mm. This nominal reduction allows for the construction of door frames; however the clear opening width of the doorway should be at least 800mm. An escape route should not narrow in the direction of escape. However an escape route may pass through a wider circulation area leading to a narrower circulation area provided the latter is of a width at least that recommended for the escape route.

16. A side-hung door across an escape route may open against the direction of escape where the occupancy capacity in the building or part of the building is sufficiently low. Where the occupancy capacity is 60 or more, the door should open in the direction of travel. However, if the door is an emergency door or a door serving a place of special fire risk, the door should open in the direction of escape regardless of occupancy levels.

Subdivision of corridors

17. For purposes of smoke control, certain corridors should be subdivided with a wall or screen with a short duration (30 minutes) fire resistance (insulation criteria need not be applied to the wall, screen or any door). Any door in the wall or screen should be at least an FD 30S self-closing fire door and:

- Where the corridor is a dead-end more than 4.5m long and provides access to a point from which more than 1 direction of escape is possible, it should be divided at that point or points; and
- Where the corridor provides at least 2 directions of escape and is more than 12m in length between the exits it serves, it should be divided in the middle third of the corridor. This does not mean that the corridor should be subdivided into 12m lengths.

Stairways

18. Every escape stair should give access directly to a safe area or, in the case of escape routes that will be used by **staff only**, an escape route across a flat roof or access deck to a safe area.

19. The effective width of an escape stair should be at least 1200mm. The effective width of an escape stair is measured between handrails and must be clear of obstructions. An escape stair should not narrow in the direction of escape.

20. Where a building or part of a building has only one escape route by way of an escape stair; access to the escape stair should be by way of a protected lobby. This should afford people making their escape additional time to pass the fire floor in relative safety. The wall dividing a protected lobby from the remainder of the protected zone may have a short duration (30 minutes) fire resistance for integrity only and any door in the wall should be at least an FD 30S self-closing fire door.

21. An escape stair should be within a protected zone. However, this is not necessary in the following situations:

- An escape stair which connects 2 or more levels within a single-storey where the difference in level between the highest and lowest level is not more than 1.8m; or
- An external escape stair with a total rise of not more than 1.6m;
- An external escape stair; or
- An escape stair from a gallery.

22. The enclosing structure of the protected zone should have at least a medium duration (60 minutes) fire resistance; any door in the enclosing structure should be at least an FD 60 self-closing fire door. However, the floor of the lowest storey or an external wall (other than an external wall described below), need not be fire resisting.

23. The speed of evacuation of people with mobility problems can be much slower than able bodied people and they should be provided with space to wait temporarily until it is safe to use the escape stair. The spaces should not be used for any form of storage. A protected zone enclosing an escape stair and an external escape stair should be provided with an unobstructed clear space capable of accommodating a wheelchair and measuring not less than 700mm x 1200mm on every landing to which there is access from a storey. However, a temporary waiting space need not be provided in a protected zone where the storey has level or ramped egress to a safe area or the storey is inaccessible to wheelchair users.

24. Where an escape stair also serves a basement storey, the protected zone enclosing the escape stair in the basement storey should be separated from the protected zone containing the escape stair serving the rest of the building, by a wall or screen, with or without a door, at the ground storey floor level. The wall, screen and self-closing fire door where provided, should have a medium duration (60 minutes) fire resistance.

25. Every part of an escape stair (including landings) and the floor of a protected zone or protected lobby, should be constructed of non-combustible material. However, this guidance does not apply to:

- Any handrail, balustrade or protective barrier on an escape stair;
- An escape stair which connects 2 or more levels within a single-storey where the difference in height between the highest and lowest level is not more than 1.8m;
- An escape stair from a gallery; or
- A floor finish (e.g. laminate flooring) applied to the escape stair (including landings) or to the floor of a protected zone or protected lobby.

26. Where an element of structure provides support to a non-combustible protected route of escape, the supporting element of structure should also be constructed from materials which are non-combustible.

27. Where any part of a protected zone enclosing an escape stair is not more than 2m from, and makes an angle of not more than 135° with any part of an external wall of another part of the building, the escape stair should be protected for a distance of 2m, by construction with a:

- Short duration (30 minutes) fire resistance where every storey in the building is at a height of not more than 7.5m above the ground; or
- Medium duration (60 minutes) fire resistance where any storey is at a height of more than 7.5m above the ground.

28. However, where the external wall of the protected zone is used to protect the escape stair, it is not sufficient to use the final exit door as a barrier between the evacuees and the fire. In such cases, the external wall adjoining the protected zone at the final exit level should be constructed from materials which are non-combustible.

29. Certain small rooms as described below, may be sited within protected zones enclosing escape stairs because the fire risk is considered to be low. However, all other parts of the building served by that escape stair should have at least one other escape route. This allows the occupants in other parts of the building to evacuate without the need to enter the protected zone enclosing the escape stair which has the additional permitted rooms within it. The types of rooms are:

- A reception room having a floor area of not more than 10m²;
- Toilets and washrooms;
- An office having a floor area of not more than 10m²;
- A general store room having a floor area of not more than 10m²; or
- A cleaner's cupboard not more than 3m², where no flammable materials are kept.

30. More than one toilet, washroom or cleaner's cupboard may be located in a protected zone enclosing an escape stair however only one of each of the other rooms listed in paragraph 29 above may be within the protected zone. The wall separating the rooms or cupboard from the protected zone should have a short duration (30 minutes) fire resistance and any door in the wall should be at least an FD 30S self closing fire door. A door to a cleaner's cupboard should be at least an FD 30S fire door but need not be self-closing provided it is kept locked. Where toilets or washrooms are located within the protected zone, then the walls and doors need not have fire resistance.

External stairs

31. External escape stairs present additional hazards to people evacuating a building in the event of fire because the escape stair will be exposed to the possible effects of inclement weather and people who are unfamiliar with the escape routes can feel less confident using an unenclosed stair high above the ground. For these reasons, an external escape stair should only serve a building where:

- The topmost storey height is not more than 7.5m; and
- The stair is intended to be used by staff only.

32. An external escape stair should lead directly to a safe area beyond the premises and be protected against fire from within the building in accordance with the guidance below. However, fire protection need not be provided to an external escape stair with a total rise not more than 1.6m. External fire escape stairs should be constructed of non-combustible materials.

33. Every part of an external wall (including a door, window or other opening) not more than 2m from the external escape stair, should have short duration (30 minutes) fire resistance. However, this does not apply to a door opening from the top storey to the external escape stair. Fire protection to the wall below an escape stair should be extended to the lowest ground level. Due to the likely smoke dissipation to atmosphere, service openings including ventilation ducts not more than 2m from the escape stair may be protected by heat activated sealing devices or systems.

34. Action recommended where the benchmarks are not met:

Consider upgrade to benchmark or consider installation of an automatic life safety fire suppression system as a compensatory measure.

Doors

This Technical Annexe contains benchmarks in respect of Doors and door fastenings, against which the existing level of provision can be compared.

The level of provision in this benchmark is consistent with the Technical Handbook for compliance with Scottish Building Regulations.

Fire Doors

1. A fire door is rated by its fire resistance performance under test conditions: a door rated to 30 minutes (short duration) will be described as FD 30 (when tested to BS 476 Part 22) or E 30 (when tested to BS EN 1634 Part 1). A suffix is added to denote the door has a smoke control function giving FD 30S and E 30Sa respectively. An equivalent 60 minutes (medium duration) fire door will be designated FD 60S or E 60Sa. This test rating is an indication of test performance and not necessarily how a door will perform in a real fire.
2. The level of protection provided by a fire door is measured, primarily by determining the time taken for a fire to breach the integrity of the door assembly, together with its resistance to the passage of hot gases and flame. The gap between the door leaf and the frame is normally fitted with an intumescent seal, in either the door or, preferably, the frame. This seal expands in the early stages of a fire in response to heat and enhances the protection given by the door. In nearly all cases, smoke seals will be required to prevent the spread of smoke at ambient temperatures.
3. Specification for fire door performance in respect of Fire Compartmentation and Escape is contained in Technical Annexes 13.1 and 13.6.
4. To ensure compliance with their rated fire performance, fire doors should be hung with the correct number, size and quality of hinges. Normally a minimum of three hinges is required, the manufacturer's instructions should be closely followed. Other ironmongery used on doors should not be detrimental to the functioning of the door.
5. Although glazing provides additional safety in everyday use and can enhance the appearance of fire doors, it should never reduce the fire resistance of a door. The fitting of glazing should only be entrusted to a competent person. In nearly 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.

Bedroom Doors

6. Where a bedroom opens into a circulation area, a fire occurring in the bedroom will pose a threat to the residents of other rooms who have to use this circulation area for potential escape. Bedrooms are considered fire hazard rooms (as identified in Technical Annexe 13.1), and more modern premises will have FD 30S doors fitted to the bedrooms in compliance with Building Regulations.
7. The provision of fire-resisting bedroom doors offers protection to the escape route from a fire starting in a bedroom and is likely to offer additional protection to those residents who remain in their rooms awaiting evacuation.
8. Where only low dependency residents are accommodated then existing doors may be suitable which, while not meeting the specification for an FD 30 door, are of substantial construction and close fitting. Some doors may have the potential to be upgraded to nominal FD 30 standard. A bedroom door will only offer protection to escape routes where the wall between the bedroom and corridor has a similar fire resistance to the door and has no other openings.

Self Closing Function

9. A well fitting fire door will provide a barrier to fire and smoke but will only fulfil its function if it is closed at the time a fire occurs. A controlled automatic self-closing device should be fitted to each fire door and to bedroom doors to ensure that the door is returned to the closed position and is held in this position so that it can restrict the spread of fire and smoke. Controlled self closers should comply with BS EN 1154 or BS EN 1634-2.

10. A self closing door could be a source of injury to some residents or the door could be difficult to open and this should be considered when selecting or assessing the suitability of the type of self-closing device.

Hold Open and Door Release Devices

11. Self closing devices may pose an obstacle to the movement of residents and the operation of the residential care premises. Many residents may wish (or need) to keep their bedroom doors open, for ventilation or communication or comfort and it can be of value to staff (and residents) to have doors open so that the staff can check the residents with a minimum of disturbance. Fire safety measures should not impair the quality of life of the residents and the provision of appropriate equipment and management procedures can achieve this.

12. Self-closing doors can be fitted with electromagnetic **hold-open devices** (which comply, where appropriate, to BS 5839: Part 3: 1988), provided the door is not an emergency door; a protected door serving the only escape stair in the building (or the only escape stair serving part of the building) or a protected door serving a fire-fighting shaft. It is important that hold-open devices deactivate on operation of the fire alarm. Electrically operated hold-open devices should deactivate and release the door on:

- Operation of the fire alarm system;
- Any loss of power to the hold open device, apparatus or switch; and
- Operation of a manually operated switch fitted in a position at the door.

13. As an alternative to the above hold open device, an **acoustically activated door release mechanism** and floor plate complying with BS EN 1155: 1997 may be installed subject to risk assessment and correct fitting. However, this type of hold open device is not suitable for use where:

- The door is an emergency door; a protected door serving the only escape stair in the building (or the only escape stair serving part of the building); or
- The initial fire alarm warning signal is intended to alert staff only; or
- The fire alarm sounders may be muted or the sound level reduced; or
- The fire alarm system incorporates a voice alarm.

14. Where the two types of hold-open device considered above are used, they require to be fitted in a manner that avoids twisting of the door which may cause damage. They also may not be suitable for prolonged use over an indefinite period due to the potential for warping of the door; hinge drop and damage to the self closing device. Where they are fitted, a common approach to inhibit this damage is to keep the doors closed at night.

15. A further type of self closing device comprises a **'swing free' arm** which operates by allowing the door leaf to work independently of the closing device in normal conditions. An electro-magnetic device within the self-closer linked to the fire alarm system ensures the door closes on the operation of the fire alarm or power failure. This type of device has the advantage that it may allow a door to be open at night.

16. The automatic closing of a door fitted with a hold open or release device, should occur when the fire alarm operates as a result of fire or test. It may also operate (depending on type) by a remote release switch, or on a programmed time release, or on power failure. This closing may take residents by surprise and may be a source of injury (see also paragraphs 9 and 10 above in respect of type of self closer). Precautions should be taken to avoid injury when the door closing operation is pre-planned.

Door Fastening

17. Where an exit door from a room, storey or a door across an escape route has to be secured against entry, it should only be fitted with a lock or fastening which is readily operated, without a key, from the side approached by people making their escape. Similarly, where a secure door is operated by a code, combination, swipe or proximity card, biometric data or similar means, it should also be capable of being overridden from the side approached by people making their escape.

18. For final exit doors, push pad devices to BS EN 179 are suitable where occupants can be expected to be familiar with the devices. In other cases push bar devices to BS EN 1125 are suitable.

19. Where a door also has a fastening which can only be opened from one side of the door, there is a need to consider that members of staff, after passing through the door in an emergency situation, could be prevented from re-entering via this door to assist residents if the door closes behind them. This is especially likely if the door is also fitted with a self closing device.

20. **Electrically powered locks** should not be installed on a protected door serving the only escape stair in the building (or the only escape stair serving part of the building) or a protected door serving a fire-fighting shaft or on any door which provides the only route of escape from the building or part of the building.

21. Electrically powered locks should return to the unlocked position:

- on operation of the fire alarm system;
- on loss of power or system error; and
- on activation of a manual door release unit (Type A to BS EN 54: Part 11: 2001) positioned at the door on the side approached by people making their escape. (Where the door provides escape in either direction, a unit should be installed on both sides of the door.)

22. A locking mechanism which remains locked in the event of a power failure or system error, is not appropriate for use on exit doors and doors across escape routes.

23. Electrically powered locks can be operated by electromagnetic or electromechanical means. **Electromechanical** devices operate by using a spring mechanism to return the lock keep or draw bolt(s). These mechanisms can jam when pressure is applied to the door and are normally unacceptable on escape doors unless it can be verified that they do not rely on a spring mechanism, they fail-safe to the unlocked position and are not affected by pressure, in which case the criteria for electromagnetic devices must be adhered to.

24. **Electromagnetic** devices operate by the interruption of electrical current to an electromagnet. They are generally considered to be more reliable than electromechanical devices due to the absence of moving parts and their inherent 'fail-safe' operation.

Locking of Bedroom Doors

25. In residential care premises where residents wish to lock doors of private accommodation for safety, security or privacy, then this should be considered where the doors can be readily openable from within without the use of a key; members of staff carry a master key that opens all doors; staff carry the key at all times; and this arrangement does not prejudice the emergency evacuation of residents. The management must ensure adequate training for staff and ensure that a robust method for the handing over of keys is in place.

Automatic Opening Doors

26. An automatic opening door which is used as an exit, should comply with BS 7036: 1996 and either:

- Be arranged to fail safely to outward opening from any position of opening or;
- Be provided with a monitored fail-safe system for opening the door from any position in the event of mains supply failure and also in the event of failure of the opening sensing device; and
- Opens automatically from any position in the event of operation of the fire alarm in the fire alarm zone within which the door is situated; and
- Permits easy manual opening from any position.

27. Where an internal swing door is an automatic opening door to facilitate movement of residents, the automatic opening mechanism should be linked to the fire alarm system so that on operation of the fire alarm system, the automatic opening function is disabled.

28. **Action recommended where the benchmarks are not met:**

Consider upgrade to benchmark.

Escape Lighting

This Technical Annexe contains benchmarks in respect of Escape Lighting, against which the existing level of provision can be compared.

The level of provision in this benchmark is consistent with the Technical Handbook for compliance with Scottish Building Regulations.

Escape Route Lighting

1. In protected zones the artificial lighting should be supplied via a protected circuit separate from that supplying any other part of the escape route, unless a system of emergency lighting is installed in the protected zone. A protected circuit is a circuit originating at the main incoming switch or distribution board, the conductors of which are protected against fire. It may be easier to rely on self-contained emergency lighting luminaires than to install a protected circuit to an existing lighting system.
2. 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.

Emergency Lighting

3. Emergency lighting should be installed in:
 - A room with an occupancy capacity of more than 10 and any protected zone or unprotected zone serving such a room;
 - A protected zone or unprotected zone serving a storey which has 2 exits, other than a storey in a building not more than 2 storeys high with a combined floor area of not more than 300m² and an occupancy capacity of not more than 10;
 - A protected zone or unprotected zone in a single stair building of 2 storeys or more and an occupancy capacity of 10 or more.
 - In a protected zone or unprotected zone serving a basement storey; and
 - In a place of special fire risk (other than one requiring access only for the purposes of maintenance) and any protected zone or unprotected zone serving it.
4. The lighting should comply with BS 5266: Part 1: 1999 as read in association with BS 5266: Part 7: 1999 (BS EN 1838: 1999) or an earlier equivalent.
5. Emergency lighting can be stand-alone dedicated units or incorporated into normal light fittings. Power supplies can be rechargeable batteries integral to each unit, a central battery bank or an automatic generator. Single 'stand-alone' emergency lighting units may be sufficient in some premises and these can sometimes be combined with exit or directional exit signs. The level of general illumination should not be significantly reduced by the sign.
6. An emergency 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;
 - Staircases so that each flight receives adequate light;
 - Changes in floor level;
 - Windowless rooms and toilet accommodation exceeding 8m²;

- Fire-fighting equipment;
 - Fire alarm call points;
 - Equipment that would need to be shut down in an emergency; and
 - Lifts.
7. Emergency lighting can be 'maintained', i.e. on all the time, or 'non-maintained' which only operates when the normal lighting fails. Units are available with durations of between one and three hours.
8. **Action recommended where the benchmarks are not met:**
Consider upgrade to benchmark.

Signs

This Technical Annexe contains benchmarks in respect of Signs, against which the existing level of provision can be compared.

1. **Escape route signs** should meet the following criteria:
 - If the escape route to the nearest exit is not obvious then it should be indicated by a sign(s);
 - 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 a directional arrow. Arrows should not be used on their own;
 - Escape route and exit signs should not be fixed to doors as they will not be visible if the door is open; and
 - Signs mounted above doors should be at a height of between 2.0m and 2.5m above the floor. Signs on walls and hanging signs should be mounted between 1.7m and 2.0m above the floor.
2. Guidance is available in BS 5499: Part 4 and Part 5. The pictogram on an escape sign can be supplemented by text if this is considered necessary to make the sign easily understood, but a safety sign should not use only text.
3. **Action recommended where the benchmarks are not met:**

Consider upgrade to benchmark.

Fire Alarm Systems

This Technical Annexe contains benchmarks in respect of Fire Detection and Alarms, against which the existing level of provision can be compared.

The level of provision in this benchmark is consistent with the Technical Handbook for compliance with Scottish Building Regulations.

System type

1. A fire detection and warning system designed, installed and maintained in accordance with the guidance in BS 5839: Part 1: 2002 for a Category L1 system is likely to be appropriate for the majority of residential care premises; as is a system installed to a previous equivalent standard. A category L1 system is a system designed for the protection of life and which has automatic detectors installed throughout all areas of the building (including roof spaces and voids).
2. Rooms opening into circulation areas and escape routes should normally be fitted with heat detection or smoke detection, for residential care premises with high or medium dependency residents, smoke detection is appropriate.
3. In a medium sized premises (sleeping no more than ten residents) a category L2 system designed to BS 5839: part 1 2002. A category L2 system is a system designed for the protection of life and which has automatic detectors installed in escape routes, rooms adjoining escape routes and high hazard rooms.

Power supply

4. The fire alarm system should have a secure power supply for the system derived from a dedicated mains supply and a back up power supply. Older fire alarm systems which are powered from a mains supply only, are not appropriate for residential care premises.

Call points

5. Manual call points are normally positioned at every exit and storey exit, not just those designated as fire exits. They should be conspicuous, fitted at a height of about 1.4m (or less for premises with a significant number of wheelchair users), and not in an area likely to be obstructed.

Sounders

6. An appropriate sound level for sounders will vary with the nature of the premises and staffing arrangements. Where staff are always on duty and awake, 45dB(A) is appropriate throughout the building. Where staff are asleep on the premises, it is necessary to provide 75dB(A) at the bed head in staff bedrooms.
7. Account should be taken of the fact that the sound of the fire alarm may be distressing for residents who depend on staff assistance.
8. **Action recommended where the benchmarks are not met:**
Consider upgrade to benchmark.

Portable Fire Extinguishers

This Technical Annexe contains benchmarks in respect of Portable Fire Extinguishers, against which the existing level of provision can be compared.

Number and type of extinguishers

1. The provision of extinguishers can be determined by their extinguishing capacity and size. They are marked with a letter and a number: the letter denotes the class of fire (see table in chapter 11), the number denotes the size of fire tested against. An extinguisher could therefore have a rating of, for example '9A' or '13B'.
2. A guide to the level of provision of class A extinguishers, is obtained by multiplying the floor area of a storey by 0.065. A floor area of 400m² would have a rating of 26A (400 × 0.065 = 26). Where there are other classes of fire risk, appropriate extinguishers for these risks should be provided. In small premises, multi-purpose extinguishers which can cover a range of risks may be appropriate. Generally, at least one water-based extinguisher for approximately every 200m² of floor space, with a minimum of two extinguishers per floor, will be adequate.
3. Fire extinguishers should be positioned on escape routes, close to room or floor exits, final exits from the building or, if necessary, adjacent to hazards. 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 1m for larger extinguishers, 1.5m for smaller ones, to the level of the handle). Ideally no one should have to travel more than 30m to reach a fire extinguisher. The weight of extinguishers and manual handling by staff should be taken into account.
4. It can be good practice to group extinguishers together in fire points clearly and conspicuously indicated and at a similar position on each floor.
5. Extinguishers are red and may have a colour-coded area, sited above or within the instructions, denoting the type of extinguisher. Older extinguishers which have been manufactured with the body of the extinguisher painted entirely in a single colour remain acceptable until they are no longer serviceable.
6. Information on the selection and installation of fire extinguishers is contained in BS 5306 part 8.
7. **Action recommended where the benchmarks are not met:**
Consider upgrade to benchmark.

Automatic Life Safety Fire Suppression Systems

This Technical Annexe contains benchmarks in respect of Automatic Life Safety Fire Suppression Systems, against which the existing level of provision can be compared.

The level of provision in this benchmark is consistent with the Technical Handbook for compliance with Scottish Building Regulations.

Sprinklers

1. If provided in residential care premises, an automatic life safety sprinkler system should be designed and installed in accordance with the recommendations for 'residential occupancies' contained in BS 9251 (previously contained in BS DD 251: 2000). Components of the system should be as specified and tested in accordance with BS DD 252: 2002. Sprinkler heads should be 'quick response type' with a response time index (RTI) of $50 \text{ (m/s)}^{1/2}$ and a conductivity factor (c) of not more than 1 (m/s)^2 .
2. For a suppression system, such as sprinklers, to be effective it is essential that there is an appropriate water supply. Therefore designers need to discuss with the water undertaker what supply is likely to be available and what pressure can be expected. It is recognised that pressures will vary during the day, over the year and perhaps in future years. Therefore it is imperative that the system is designed on the basis of what the minimum pressure and flow is likely to be.

Furniture, Textiles, Bedding and Sleepwear

This Technical Annexe contains benchmarks in respect of Furniture, Textiles, Bedding and Sleepwear, against which the existing level of provision can be compared.

1. **Upholstered furniture** (and composites of cover material and infill) should meet the standards in the Furniture and Furnishings (Fire) (Safety) Regulations 1988 (as amended): and in addition, pass the flammability standard in BS 5852: 1990 with ignition sources 0 and 5.
2. **Loose furniture covers** should be capable of meeting BS 5852 ignition source 1.
3. **Textile fabrics for curtains** (including nets, linings and blackout curtains) should meet the standards of BS 5867 Part 2:Type B, and the full curtain test (Department of the Environment Fire Retardant Specification No 7), with ignition sources 0 and 5.
4. **Roller blinds** should meet the Department of the Environment Fire Test Specification No 17, using ignition source 5. Where cloth type vertical blinds are used, the fabric should meet BS 5867 Part 2:Type B.
5. BS 5287 contains an assessment system for **textile floor coverings**. These coverings are not normally a serious fire hazard. Textile floor coverings bonded to the floor present a lower fire risk than those loosely laid.
6. **Polypropylene chairs** should have flame retardant polypropylene shells.
7. Totally **soft play environments** can contain a large volume of foam in various shapes. The covered foam should pass BS 5852 (Section 4) with ignition sources 0 and 5. Where such environments are extensive, as in gymnasia, extra care must be taken and additional precautions may be necessary.
8. **Blankets** should be flame retardant. BS 5866, Part 4 contains flammability performance standards for individual blankets, or BS 7175, Part 3 for a representative fabric sample.
9. **Counterpanes** should be flame retardant and should meet the standards of the public sector specification – BS 5815, Part 3. Counterpanes covering the bed at all times will help to protect the other textile bedding items from involvement in a fire.
10. **Continental quilts/duvets** should be flame retardant to meet the standard of BS 7175: Section 2, with ignition sources 0 and 5. Quilt covers should meet the construction and flammability standards of BS 5815, Part 3.
11. **Mattresses** should achieve the flammability standard for a mattress with a waterproof cover as stated in BS 6807: Section 2 with ignition source 0.
12. **Mattress overlays, fleeces and under pads** used for residents with a pre-disposition to pressure sores. Where possible these products should meet BS 7175: Section 3 using ignition sources 0 and 5, unless there is conflict with a resident's clinical needs.
13. **Pillows** should meet the standards in BS 7175: Section 2 with ignition sources 0 and 5.
14. **Sleepwear** (including dressing gowns and bed jackets) should conform to BS 5722. This gives three different levels of flammability performance. Level 3 is acceptable for normal situations, but higher performance levels can be specified for high risk situations (level 1 being the highest).

Definition of Terms Used in this Guide

Child	A person who is not over school age (to be construed in accordance with section 31 of the <i>Education (Scotland) Act 1980</i>).
Compartment	Part of a building (which may contain one or more rooms, spaces or storeys and includes, where relevant, the space above the top storey of the compartment) constructed so as to prevent the spread of fire to or from another part of the same building.
Emergency door	A door which may be a fire door and which is intended to be used only during an emergency.
Fire door	See paragraph 1 in Technical Annexe 13.7.
Firefighting shaft	A shaft enclosed by walls forming the enclosing structure of a protected zone with a long fire resistance duration.
Fire hazard room	A room as listed in paragraph 3 of Technical Annexe 13.1.
Hard standing	An area of ground which will support the weight of a Fire and Rescue Service vehicle regardless of the weather conditions.
Hazard	A situation that can give rise to a fire.
Place of special fire risk	Any place within, or attached to, or on a roof of a building in which there is installed one or more: <ul style="list-style-type: none"> • solid fuel appliances, with an output rating more than 50kw, other than kitchen appliances; or • oil or gas fired appliances, with a total installed net input rating more than 70kw; or • fixed internal combustion engines, including gas turbine engines with a total output rating more than 45kw; or • fuel oil storage tanks having a capacity more than 90 litres.
Protected door	A fire door giving access to: <ul style="list-style-type: none"> • a protected zone, (including a protected lobby); or • a fire-fighting shaft; or • another compartment; or • a place of safety; or • an unenclosed escape stair; or • an open access balcony; or • an escape route across a flat roof or access deck.

Protected lobby	A lobby within a protected zone but separated from the remainder of the protected zone so as to resist the movement of smoke from the adjoining accommodation to the remainder of the protected zone.
Protected zone	That part of an escape route within a building, but not within a room, and to which access is only by way of a protected door from which there is an exit directly to a place of safety and which is constructed as a compartment.
Risk	The potential for a fire to occur and cause death or injury.
Sub-compartment	Part of a building (which may contain one or more rooms, and includes, where relevant, the space above the top storey of the sub-compartment) constructed so as to aid progressive evacuation.
Unprotected zone	That part of an escape route which is separated by walls, glazed screens or any other permanent form of demarcation from any space intended for human occupation, including a protected zone.
Young person	Any person who has not attained the age of 18.

Reference Material

1. Fire (Scotland) Act 2005: Part 3 (as amended)
2. Fire Safety (Scotland) Regulations 2006* SSI 2006*/
3. Liquefied Petroleum Gas Association: Code of Practice 24 The use of LPG cylinders.
 - Part 1 The use of Propane in cylinders at residential premises
 - Part 2 The use of Butane cylinders at residential premises

(www.lpga.co.uk)
4. Building (Scotland) Regulations 2004
5. Scottish Building Standards Technical Handbook for Non-Domestic Buildings
6. British Standards:

British Standard 5588 Part 8: 1999 Fire precautions in the design, construction and use of buildings. Code of practice for means of escape for disabled people

British Standard 5306 part 3: 2003 Fire extinguishing installations and equipment on premises. Code of practice for the inspection and maintenance of portable fire extinguishers

British Standard EN 1634 Part 1: 2002 Fire resistance tests for door and shutter assemblies. Fire doors and shutters

British Standard EN 1154: 1997 Building hardware. Controlled door closing devices. Requirements and test methods

British Standard EN 1634 Part 2: 2004 Fire resistance tests for door and shutter assemblies. Part 2. Fire door hardware. Building hardware for fire resisting doorsets and openable windows

British Standards 5839 Part 1: 2002 Fire detection and alarm systems for buildings. Code of practice for system design, installation, commissioning and maintenance

British Standard 5839: Part 3: 1988 Fire detection and alarm systems for buildings. Specification for automatic release mechanisms for certain fire protection equipment

British Standard EN 1155: 1997 Building hardware. Electrically powered hold-open devices for swing doors. Requirements and test methods

British Standard EN 1125: 1997 Building hardware. Panic exit devices operated by a horizontal bar. Requirements and test methods

British Standard EN 179 Building hardware. Emergency exit devices operated by a lever handle or push pad. Requirements and test methods

British Standard EN 54 Fire detection and fire alarm systems. Manual call points

British Standard 7036: 1996 Code of practice for safety at powered doors for pedestrian use

British Standard 5266: Part 1: 1999 Emergency lighting. Code of practice for the emergency lighting of premises other than cinemas and certain other specified premises used for entertainment

British Standard 5266: Part 7: 1999 (BS EN 1838: 1999) Lighting applications. Emergency lighting

British Standard 5499: Part 5: 2002 Signs with specific safety meanings

British Standard 5499: Part 4: 2000 Safety signs, including fire safety signs. Code of practice for escape route signing.

British Standard 5306: part 8: 2000 Fire extinguishing installations and equipment on premises. Selection and installation of portable fire extinguishers. Code of practice

British Standard DD 251: 2000 Sprinkler systems for residential and domestic occupancies. Code of practice (superseded by BS 9251: 2000)

British Standard DD 252: 2002 Components for residential sprinkler systems. Specification and test methods for residential sprinklers

British Standard 9251: 2005 Sprinkler systems for residential and domestic occupancies. Code of practice

British Standard 5852: 1990 Methods of test for assessment of the ignitability of upholstered seating by smouldering and flaming ignition sources

British Standard 5867 Part 2: 1980 Specification for fabrics for curtains and drapes. Flammability requirements

British Standard 5287: 1988 Specification for assessment and labelling of textile floor coverings tested to BS 4790

British Standard 5866: Part 4: 1991 Blankets suitable for use in the public sector. Specification for flammability performance

British Standard 7175: Part 3: 1989 Methods of test for the ignitability of bedcovers and pillows by smouldering and flaming ignition sources

British Standard 5815: Part 3: 1991 Sheets, sheeting, pillowslips, towels, napkins, counterpanes and continental quilt secondary covers suitable for use in the public sector. Specification for counterpanes and continental quilt secondary covers including flammability performance

British Standard 6807: 1996 Section 2: Assessment of the ignitability of mattresses, upholstered divans and upholstered bed bases with flaming types of primary and secondary sources of ignition

British Standard 5722: 1984 Specification for flammability performance of fabrics and fabric assemblies used in sleepwear and dressing gowns

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