PRACTICAL FIRE SAFETY GUIDANCE FOR CARE HOMES

Revised December 2006

safer scotland
SCOTTISH EXECUTIVE

The guidance in this document has been jointly produced by the Scottish Executive's Justice Department, HM Fire Service Inspectorate for Scotland, the Scottish Building Standards Agency and the Health and Safety Executive.

CONTENTS

	Page
Chapter 1: INTRODUCTION	4
Chapter 2: SCOPE	5
Chapter 3: WHAT THE LAW REQUIRES	7
Who must comply with these Duties?	7
Who enforces the Fire Safety Law?	7
Chapter 4: FIRE SAFETY RISK ASSESSMENT	10
What is a Fire Safety Risk Assessment?	10
How is a Fire Safety Risk Assessment carried out?	10
Step 1: Identify People at Risk	12
Step 2: Identify Fire Hazards	12
Step 3: Evaluate the Risk and decide if existing Fire Safety Measures are adequate	14
Step 4: Record Fire Safety Risk Assessment Information	17
Step 5: Review of Fire Safety Risk Assessment	17
Chapter 5: MANAGING FIRE SAFETY	18
Fire Safety Policy	18
Emergency Fire Action Plan	19
Fire Safety Information and Training	21
Fire Drills	22
Maintenance of Fire Safety Measures	23
Recording Information and Keeping Records	24
Chapter 6: REDUCING THE LIKELIHOOD OF FIRE	26
Housekeeping and Storage	26
Storage and Use of Dangerous Substances	27
Safe Use of Equipment	28
Electrical	28
Smoking	29
Managing Building Work and Alterations	29
Particular Hazards in Escape Routes	30
Security	30
Furniture, Textiles, Bedding and Sleepwear	30

Chapter 7: RESTRICTING THE SPREAD OF FIRE AND SMOKE 32
Fire Compartmentation 32
Doors 33
Fire Separation 33
Fire Spread through Cavities 33
Ventilation Systems 34
Fire Spread on Internal Linings 34
Fire Spread on External Walls 34
Fire Spread from Neighbouring Buildings 35

Chapter 8: MEANS OF ESCAPE 36

Chapter 9: ENSURING THAT MEANS OF ESCAPE CAN BE USED 37
Escape Route Lighting 37
Emergency Lighting 37
Signs 37
Notices 38

Chapter 10: MEANS FOR DETECTING FIRE AND GIVING WARNING 39
Fire Alarm Features 39
Linked Operation 40
Remote Monitoring 40
Reducing False Alarms 41

Chapter 11: MEANS FOR FIGHTING FIRE 42
Fire-Fighting Equipment for Use by Persons 42
Automatic Life Safety Fire Suppression Systems 43

Chapter 12: FIRE AND RESCUE SERVICE FACILITIES 44
Fire and Rescue Service Access 44
Water Supply for Fire and Rescue Service Use 44
Smoke Ventilation 44
Other Fire and Rescue Service Facilities 44

Technical Annexes

Introduction 45
13.1 Fire Compartmentation 46
13.2 Fire Separation 48
13.3 Structural Fire Protection 49
13.4 Fire Spread through Cavities 50
13.5 Fire Spread on Internal Linings 51
13.6 Fire Spread on External Walls 53
13.7 Fire Spread from Neighbouring Buildings 54
13.8 Escape 55
13.9 Doors 62
13.10 Escape Lighting 66
13.11 Signs 68
13.12 Fire Alarm Systems 69
13.13 Portable Fire Extinguishers 71
13.14 Automatic Life Safety Fire Suppression Systems 72
13.15 Furniture, Textiles, Bedding and Sleepwear 73

Supplementary Annexe

14.1 Fire and Rescue Service Access and Water Supplies 75

Definition of Terms Used in this Guide 77

Reference Material 80

Chapter 1: INTRODUCTION

1. This guide has been produced to assist those who have responsibility for ensuring fire safety in care homes in Scotland. The *Fire (Scotland) Act 2005*, as amended, introduced changes to fire safety law in Scotland and repealed previous fire safety legislation. 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 care homes.

2. Fatalities have occurred in fires in premises providing residential care and this clearly demonstrates the serious risk 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. Reducing the risk from fire is one of the most important and fundamental duties in a care home.

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 publication *"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 care homes.

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 twelve chapters and a number of Technical Annexes numbered 13.1 to 13.15. The first three chapters are an introduction, a description of the scope and an overview of fire safety law and responsibilities under the *Fire (Scotland) Act 2005*, as amended. 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,* as amended*).*

6. In the event that this guide is read by persons with duties under the *Fire (Scotland) Act 2005*, as amended, and those persons feel unable to apply the guidance, then they should seek assistance from someone with sufficient technical knowledge. In this respect, the Fire and Rescue Authority or Joint Fire and Rescue Board, as enforcer of the legislation, cannot undertake the role. However, the enforcing authority does have a statutory requirement to provide general advice on request about issues relating to fire safety and should be able to provide information and advice which will assist dutyholders to understand their obligations under the law.

7. The Technical Annexes set out more information about fire safety measures and offer benchmarks against which fire safety measures can be compared. The Technical Annexes contain some information that may require a level of knowledge and experience of fire safety matters.

Chapter 2: SCOPE

8. Part 3 of the *Fire (Scotland) Act 2005,* as amended, 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.

9. The guidance in this document is applicable to general fire safety in premises in which a care home service is provided, as defined in the *Regulation of Care (Scotland) Act 2001*. These care homes can provide a service 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.

10. There may be other premises which have similar fire risk characteristics to care homes, and to which the contents of this guide may be appropriate.

11. The fire safety provisions in Part 3 of the *Fire (Scotland) Act 2005*, as amended, 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.

12. Where possible, this guide does not set down prescriptive standards, but provides recommendations regarding the fire safety risk assessment process, the reduction of risk and guidance on fire safety measures that can be implemented to mitigate risk. It is not necessary to follow the recommendations of this guide if other fire safety risk assessment methods, or fire safety measures which achieve the same end, are used. In some premises, the fire safety measures already in place may not be the same as those referred to in this guide as benchmarks, but so long as it can be demonstrated that they meet the requirement of the outcomes of the risk assessment and provide a suitable level of fire safety, they may be acceptable. This means there is no obligation to adopt any particular solution in this guide if the outcomes of a fire safety risk assessment can be met in some other way.

13. 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.

14. Generally, care homes comprising either a ground floor, ground and first floor or ground, first and second floor will fall within the scope of this guide. Care homes that have resident or staff bedrooms located on a floor that is more than three storey heights above the ground or access level, or where the only escape route from occupied basement rooms is by way of a single stair leading to the ground storey, may offer particular difficulties in achieving suitable fire safety measures. Fire safety in such premises is more complex and advice should be sought from a fire safety specialist.

15. Where the care home is, or includes, a listed building (a building of special architectural or historic interest, included in a list compiled by the Scottish Ministers), there may be a need to consider the character of the building inside as well as out. Measures to prevent fire, to limit its spread, and to ensure life safety will be as necessary in a historic building as in any other. Before changes are made, advice should be obtained from the local planning authority as to whether Listed Building Consent may be required. Alternatives could be considered to some of the conventional fire safety measures set out in the Technical Annexes, as these may, in some cases, harm the character of historic buildings. A fire engineering approach combining automatic fire detection, fire suppression system and smoke control is recommended in the Historic Scotland Technical Advice Notes 11, 14, 22 and 28.

16. 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 and be subject to building warrant approval, if required.

17. 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. It is possible for a standard higher than that required by Building Regulations to be necessary and appropriate as a consequence of a fire safety risk assessment.

Chapter 3: WHAT THE LAW REQUIRES

18. This guide and its contents constitute guidance given by the Scottish Ministers in terms of section 61(2) of the *Fire (Scotland) Act 2005,* as amended. Part 3 of the *Fire (Scotland) Act 2005*, as amended, and related subordinate legislation set out the fire safety duties for the majority of premises in Scotland, with the exception of private dwellings. Care homes will be subject to the Act and related subordinate legislation. In general, the legislation seeks to ensure the safety of persons (whether they are employees, residents, visitors or others) in the premises in respect of harm caused by fire, by setting out fire safety responsibilities.

19. 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;
- Identifying the fire safety measures 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.

20. 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*, as amended, and related subordinate legislation. Anyone in any doubt about their legal obligations should seek their own independent legal advice.

Who Must Comply with these Duties?

21. The responsibility for complying with these fire safety duties in care homes sits with the employer and other persons who have control of the premises to any extent, such as tenants, contractors and volunteers working on site may also have some responsibilities. Employers are required to ensure the safety of employees so far as is reasonably practicable. This means that the sacrifice in terms of time, effort, expense and any other disadvantages associated with the provision of fire safety measures should be weighed against the magnitude of the fire risk if they were not taken.

22. All other persons with fire safety responsibilities in respect of the premises are required to take all reasonable measures regarding the safety of persons in, or in the immediate vicinity of the premises. Where premises or responsibilities are shared, each employer, owner or other person who has control over any part of the premises is required to co-operate and co-ordinate in respect of complying with fire safety law and to inform each other of risks.

Who Enforces the Fire Safety Law?

23. The responsibility for compliance with the legislation sits principally with the persons who operate and work in care homes but there is also provision in the legislation for an enforcing authority with enforcement powers.

24. 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 care homes. 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.

25. Enforcement officers may do anything necessary to allow them to enforce the fire safety duties, including:

- Entering premises for inspection at any reasonable time, or at any time if the officer has 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 considered necessary 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 from fire; and
- Taking possession of an article for purposes of examination or use as evidence.

26. 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;
- Formal enforcement action which could result in the issue of an enforcement notice that requires specified action to be taken;
- 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.

27. Enforcing authorities are required to take into account the content of this guide to assist in determining whether enforcement action may be necessary but in doing so they should have a flexible approach to enforcement and should not use the benchmarks in the Technical Annexes as prescriptive standards. This would be a misinterpretation, as the objective is to use the relevant benchmarks when assessing the existing fire safety measures and the guidance provided in the Technical Annexes may be a method of assisting with the reduction of the risk.

28. Where there is disagreement with the enforcing authority on compliance issues, there is a mechanism for joint referral for third 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.

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

30. 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 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, such as measures provided for the protection of property or the continuation of business.

31. 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. 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

32. Care providers, managers and any persons with control to any extent of the care home, including its owner in some cases, 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 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 proficient to do so.

33. Persons can be considered proficient where they have sufficient technical training and experience or knowledge, both to carry out a fire safety risk assessment and understand fully the procedures and management involved, and to undertake properly the measures referred to in this guide. Risk assessment in complex premises may require the assessor to have a greater level of knowledge and expertise.

34. This chapter explains fire safety risk assessment and sets out a step-by-step guide to 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?

35. 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 are evaluated and kept under review to establish whether they are adequate or if more requires to be done.

36. For the purpose of fire safety risk assessment, a **hazard** is a situation that can give rise to a fire. **Risk** has two components: the **likelihood** that a fire may occur; and the potential for a fire to cause death or injury ie **consequence**. Both of these components should be considered in a fire safety risk assessment.

37. The aims of a fire safety risk assessment are:-

- To identify hazards and reduce the risk of those hazards causing harm to as low as is reasonably practicable; 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?

38. There are five steps in the assessment process and these are shown in Figure 1.

FIRE SAFETY RISK ASSESSMENT	
1	Identify people at risk
2	Identify fire hazards Sources of ignition Sources of fuel Sources of oxygen
3	Evaluate the risk and decide if existing fire safety measures are adequate Evaluate the likelihood of a fire starting Evaluate the consequence to people from fire Implement fire safety measures · Remove or reduce fire hazards · Remove or reduce risks to people · Fire alarm · Fire-fighting equipment · Escape routes and lighting · Signs and notices · Maintenance · Effective management · Staff training
4	Record Record significant findings and action taken / action to be taken
5	Review Keep assessment under review Revise where necessary

Figure 1 Five steps of the fire safety risk assessment process

Step 1: Identify People at Risk

39. 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 care home. 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.

40. Care homes often pose special problems in respect of fire as the residents may be asleep or under the influence of some form of medication when a fire starts and residents' mobility, awareness and understanding may therefore be impaired. This will directly affect their ability to respond to an emergency. Elderly and infirm persons are particularly susceptible to the effects of smoke and toxic gases produced in a fire.

41. 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, three 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 two or more staff members in a fire emergency.

42. 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 care home 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.

43. The personal evacuation needs of residents who fall into the medium and high dependency category should be considered. Many care homes 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. These needs may vary over time and should therefore be kept under review.

Step 2: Identify Fire Hazards

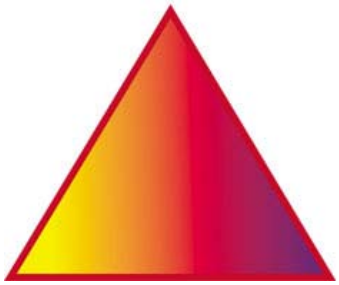
44. This step involves identifying potential ignition sources, the materials that might fuel a fire and the oxygen supplies which will help it burn.

45. For a fire to start, three components are needed: a source of ignition, fuel and oxygen. These components can be represented in the form of a triangle of fire as shown in

Figure 2. If any of these components are missing, a fire cannot start. Taking steps to avoid the three coming together will therefore reduce the chances of a fire occurring.

Figure 2 The triangle of fire

FUEL
(flammable gases, liquid or solids)



OXYGEN
(present in the air)

IGNITION SOURCE
(such as cooking, smoking electrical equipment)

Identify Sources of ignition

46. 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.

47. 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

48. 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.

49. 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

50. 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.

51. 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.

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 Likelihood 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 intentional 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 Consequences 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 if a fire starts and spreads should 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 should be considered, these are:

- Avoiding risks;
- Evaluating risks which cannot be avoided;
- Combating risks at source;
- Adapting to technical progress (as this often offers opportunities for improving working methods and making them safer);
- 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 a central heating system;
- Restrict the movement of, and guard portable heating appliances;
- If smoking is permitted by residents in adult care homes, it should be in designated smoking rooms only;
- 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 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 doors and other openings;
- Ensuring that doors are close fitting and, where appropriate, fitted with seals;
- Controlling the use and storage of oxygen cylinders and apparatus; and
- Closing down ventilation equipment.

62. In some cases the action may be a precaution taken in case a fire starts, such as keeping certain doors closed or using oxygen safely. In other cases the action may take place once a fire is detected, such as when ventilation equipment is shut down (either manually or automatically) or the automatic release of door hold open devices.

Remove or Reduce the Risks to People from a Fire

63. 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 care homes should be proportional to the risk posed to the safety of the people in the building. The higher the fire risk, the higher the standards of fire safety measures required. Fire safety law organises fire safety measures into seven groupings, 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 of fire;
- 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.

64. The objective of fire safety law is to achieve life safety. Chapters 5 to 12 contain further guidance on fire safety measures which can be adopted within care homes and the Technical Annexes contain further information and benchmarks against which existing fire safety measures can be compared. The guidance should be applied in a flexible manner but without compromising the safety of the occupants.

65. Where improvements to fire safety measures in premises are identified as a result of a fire safety risk assessment, a programme for the implementation of improvements should be drawn up. The programme should have determined timescales indicating the completion dates for any action required. Where improvements involve building work they are subject to Building Regulations.

66. It is important that the status of the Technical Annexes in this guide is understood. Most of the benchmarks in the Technical Annexes are a modification of the Building Regulation standards and associated Technical Handbook guidance that applies to new buildings. The intent of the modification is to provide benchmarks that can be used as a comparison in existing premises. Achieving the same standard as the benchmarks may reduce the risk in an existing care home to a degree consistent with the result of a fire safety risk assessment. It may be reasonably practicable to upgrade to a particular benchmark in some situations but not in others. The relevant benchmarks should be used as guidance in order to achieve an overall degree of safety and reduction in risk.

67. Enforcing authorities should not seek to compel these benchmarks on a prescriptive basis. Prescription is not compatible with fire safety risk assessment and all premises will be different, with each risk assessment being site specific and decisions in respect of fire safety standards should 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

68. Having carried out a fire safety risk assessment in relation to the care home, the findings should be recorded, including any action taken or action still to be taken. Fire safety law requires information to be recorded where five or more employees are employed (whether they are on site or not) or the premises are subject to licensing or registration or an Alterations Notice has been issued requiring this. Recommendations in respect of recording are contained in chapter 5.

Step 5: Review of Fire Safety Risk Assessment

69. 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 in the matters to which it relates, such as a change to the premises that has affected the risk or the fire safety measures, the assessment should be reviewed. Other such changes that might prompt a review include:

- 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 dangerous substances; or
- Becoming aware of shortcomings in fire safety measures or potential improvements.

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

71. 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 light of this experience. If the Fire and Rescue Service has attended a fire in the premises, their findings may help inform a review of the fire safety risk assessment.

Chapter 5: MANAGING FIRE SAFETY

72. 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 care homes in respect of:

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

Fire Safety Policy

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

- Planning: adopting a systematic approach which identifies priorities and objectives;
- Organisation: having a structure with the aim of ensuring improvement in fire safety performance;
- Control: ensuring decisions for achieving fire safety are being implemented as planned;
- Monitoring and review: constant development of policies and approaches;
- 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 at all times of day or night;
- Preparation of an emergency fire action plan;
- All means of escape should be maintained to ensure that they can be safely used at all times;
- Maintenance and testing of all other fire safety measures;
- 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; and
- 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.

74. 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 arrangements whereby regional or area managers may monitor and check that individual managers are meeting the requirements of fire safety law.

Emergency Fire Action Plan

75. In the majority of care homes, 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. Lifts should not be used unless specifically designed for the purposes of evacuation. 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.

76. 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**.

77. **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.

78. **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.

79. For many care homes, 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 should 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.

80. 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.

81. 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. Other factors which should be taken into account include authorised staff breaks or sleep periods and the conditions relating to these periods, such as duration, location and arrangements for recalling staff in the event of an emergency.

82. There should 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. It should be kept on the premises, be available in a format understood by all, as well as being known by staff and forming the basis of the training and instruction which is provided. The plan should also be available for inspection by the enforcing authority.

83. 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.

84. In drawing up the emergency fire action plan, the results of the fire safety risk assessments should be considered and the personal evacuation needs for residents with medium or high dependency should 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.

85. 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.

86. 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 should 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 dangers.

87. 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

88. The actions of staff are crucial to the safety of residents in care homes. 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 care homes.

89. All staff (including volunteers, 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, at predetermined intervals after that, to ensure that they remain familiar with procedures. 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.

90. 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.

91. 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.

92. Written instructions should be concise, comprehensible and relevant and should 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.

93. Instruction and training should take place during working hours and should include staff on shift working. The information and instruction should 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.

94. 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 care home, 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 doors on escape routes, 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 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

95. 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.

96. The frequency of drills for each building will be different and should reflect the level of risk. Fire drills should take place at least twice a year with each member of staff participating at least once a year. The 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.

97. 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. 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.

98. 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.

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

100. 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 care homes as the health and safety risks introduced may outweigh the benefits;
- Ensure that any equipment which is in use, such as cookers, can be made safe by isolating or turning off controls where appropriate;
- Nominate observers who can assess the appropriateness of actions and identify problems;
- Inform visitors if they are present; and
- On occasion, have a fire drill when staffing levels are at their minimum.

101. 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 persons 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.

102. 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 etc;
- Communication difficulties with regard to the roll-call and establishing that everyone is accounted for;
- The use of frequently used routes instead of the nearest available escape routes ;
- Difficulties with the opening of doors; and
- Doors not being closed as people leave rooms.

Maintenance of Fire Safety Measures

103. The premises, emergency routes and exits, fire-fighting equipment, fire alarm, emergency lighting, Fire and Rescue Service facilities 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. Some systems and equipment will be the subject of a British Standard which will likely contain recommendations in respect of maintenance and testing. 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. The following are examples of checks and tests that should be carried out:

104. 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; and
- Check the fire alarm control and indicating equipment to ensure the system is active and fully operational.

105. Weekly:

- 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. During a test, the alarm should not operate for too long so that there can be a ready distinction between a test and an unplanned actuation. Where the system is connected to an alarm receiving centre, the centre should be notified prior to testing;

- A check should be made to determine that the testing of the fire alarm also results in the operation or disabling of other linked features such as electrically powered locks, the release of any doors on hold open devices, the operation of doors on swing free arms and automatic opening doors reverting to manual operation;
- Check that all safety signs and notices are legible;
- Check escape routes, and test exit locking mechanisms such as panic bars, push pads and electromagnetic locking devices; and
- Ensure that fire door self-closing devices operate effectively.

106. Monthly:

- Functional tests of all emergency lighting systems should be at an appropriate time when, following the test, they will not be immediately required. 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 service engineer;
- Carry out brief visual check of fire extinguishers and hose reels to ensure there are no obvious faults; and
- 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;
    - Check any fire-resisting glazed panels are in good condition and secure in their frame; and
    - Check that intumescent strips and smoke seals are in good condition.

107. Six monthly:

- A person with specialist knowledge of fire-warning and automatic detection systems should carry out six-monthly servicing and preventative maintenance on the fire alarm.

108. Annual:

- Maintenance of portable fire extinguishers;
- Annual discharge test of emergency lighting;
- Maintenance check to hose reels; and
- Inspection and test of residential sprinkler system.

Recording Information and Keeping Records

109. 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.

110. The serious potential consequences of a fire in a care home 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 and location of ventilation system fire dampers;
- 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.

111. Records of the maintenance and testing recommended in paragraphs 103 to 108 above should be made and retained. It is for care providers to determine how long they wish to retain this type of record, but for the purposes of audit by the enforcing authority, records for a minimum period of three years should be available. Records can be kept in either an electronic or paper based format and should include:

- Escape routes, including exit locking mechanisms, such as panic bars, push pads and electromagnetic locking devices;
- Means of escape (self-closing doors, stairways, corridors and essential structural features);
- Fire alarm systems, including weekly alarm tests and periodic maintenance;
- False alarms of the fire alarm system;
- Emergency lighting systems;
- Fire extinguishers, hose reels and fire blankets etc;
- 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 LIKELIHOOD OF FIRE

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

- **Housekeeping and storage;**
- **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

113. All reasonable provisions 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 should be in designated areas only;
- Storage of combustible materials should not be permitted in plant rooms, boiler rooms, service voids and shafts, electrical main or sub-switch rooms, or any other room or space containing a fixed source of ignition;
- 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;
- Storage of residents' smoking materials should be governed by an established smoking policy in adult care homes where smoking is permitted;
- 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;
- Storage of excess materials should be in a dedicated storage area, storeroom or cupboard; and
- Bins (particularly wheeled bins) and storage containers which are used outside the building should not be kept in a position next to the building or under overhanging eaves and if capable of being readily moved, they should be secured to prevent this. In some cases where fire raising is a problem, bins may be fitted with locks.

114. Additionally, in the case of care homes for children:

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

Storage and Use of Dangerous Substances

115. Certain substances and materials are by their nature, 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*. The principles of safe handling and storage are:

- Avoid the use of flammable materials and liquids wherever possible or substitute 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, and segregated if necessary, to reduce the chance of them being involved in a fire or used in deliberate ignition;
- Ensure good ventilation to allow any flammable vapours to be dispersed; 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 so that they fail to function in restricting the spread of fire and smoke. These potential consequences should 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. They should never be stored or placed in damp areas (such as under sinks) where the container might corrode causing the canister to rupture when picked up, or on windowsills in direct sunlight or next to heat sources, however minor, where they may overheat and burst.

117. **Flammable liquids** present a particularly high fire risk. For example, a leak from a container of flammable liquid may produce large quantities of 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 room containing heating plant and/or electrical equipment on automatic timers. The risk is reduced by ensuring the storage and use of flammable liquids is carefully managed and that materials contaminated with flammables are properly disposed of.

118. Under normal circumstances, **Liquefied Petroleum Gas (LPG)** is explosive and is heavier than air. Cylinders or cartridges should be stored and used in the open air outside the building. Particular care should 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 or be used in basements or cellars. Further guidance on the safe storage, and use, of LPG is available from the supplier or the Liquefied Petroleum Gas Association.

Safe Use of Equipment

119. Lack of preventative maintenance increases the likelihood 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.

120. A capable person should adequately and regularly maintain machinery, equipment and plant, including cooking and heating equipment and office equipment such as photocopiers. Appropriate signs and instructions on safe use may be necessary.

121. 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.

122. **Oxygen** 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 enrichment can occur in clothing, upholstery or bedding. Oxygen is also dangerous when in contact with grease or oil. Smoking should not be allowed where oxygen is used or stored and there should be suitable instruction and warning signs. Staff should be aware of the inherent dangers of using oxygen and be trained in safe handling and use. 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; it should be ensured that equipment is not leaking and, where located, is adequately ventilated.

Electrical

123. 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.

124. All electrical equipment should be installed and maintained in a safe manner. If there is any doubt about the safety of electrical installations, consult an 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.

125. 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 should be positioned to avoid a tripping hazard;
- Electric blankets should be maintained and serviced in accordance with the manufacturers' guidance;
- Ensure correct wiring of plugs and correct fuse ratings; and
- Electrical equipment should only be used for its intended purpose.

Smoking

126. Careless use of cigarettes and other smoking materials is one of the most common causes of fire in care homes and staff need to be extra vigilant. Disposal of smoking materials also needs to be done with care. A cigarette may smoulder for some time, 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 for residents, staff and visitors. The prohibition on smoking does not apply to residents in adult care homes where care providers have designated rooms for residents to smoke in, although they are not obliged to designate any rooms. Designated rooms should be enclosed spaces with ventilation systems that do not ventilate into any other part of the building and should be clearly marked as a room in which smoking is permitted.

128. Where smoking by residents is permitted in designated rooms, sufficient quantities 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

129. Fires often occur when buildings are undergoing refurbishment or alteration, therefore before any building work or decoration 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.

130. 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.

131. Where there has been hot work carried out as part of building or repair work, then an inspection should be made of the affected area 30 minutes after the completion of the work to ensure that no materials have been left smouldering.

132. 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 6 m away.

Particular Hazards in Escape Routes

133. 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 ignition 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;
- Gas cylinders for supplying heaters;
- Cooking appliances;
- Bath chairs and wheel chairs;
- Upholstered furniture;
- Coat racks;
- Vending machines;
- Gas pipes, meters and similar fittings;
- Electrical equipment such as photocopiers;
- Seasonal decorations; and
- Combustibles such as refuse, laundry supplies and catering supplies.

Security

134. 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 do much to alleviate this particular problem.

135. In some care homes there may be a need to protect some residents from harm where there is the potential of 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

136. In a high proportion of fires in care homes, the material first ignited is textiles or furnishings. The choice of furniture, textiles, bedding and sleepwear can influence the ease of ignition and growth of a fire. Where possible, those items which are supplied in care homes should meet the benchmarks in Technical Annexe 13.15. Where possible, bedding and sleepwear provided by residents should achieve the same benchmarks.

137. If residents are allowed to provide some 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.

138. The filling of upholstered furniture may be easily ignitable and furniture should be maintained so that there are no tears which have caused the filling material to be exposed.

Chapter 7: RESTRICTING THE SPREAD OF FIRE AND SMOKE

139. 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 can generate smoke that is thick and black, obscures vision, causes great difficulty in breathing, and can block the escape routes. Smoke is a serious threat to life which should not be underestimated.

140. Fire is spread by three methods:

- Convection;
- Conduction; and
- Radiation.

141. 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.

142. 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.

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

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

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

Fire Compartmentation

145. 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.

146. 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.

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

Doors

148. 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.

149. In determining the fire-resistance of a door, it is necessary to consider all the doorset components including the frame, glazing, side-panels, transoms and ironmongery.

150. Technical Annexe 13.9 contains guidance and benchmarks against which existing provision can be compared.

Fire Separation

151. Where buildings or parts of buildings are in different occupation this poses particular problems in terms of fire safety, as one occupier does not usually have any control over the working practices of their co-occupiers. The purpose of fire separation is to restrict fire spread between different occupancies.

152. Where a care home adjoins or is part of a larger building, such as where it is semi-detached or in a terrace, the potential for 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.

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

Fire Spread Through Cavities

154. 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.

155. 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 duct or any other space used to run services around the building.

156. 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.

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

Ventilation systems

158. The potential for ventilation systems to allow the spread of fire and smoke should be considered. A powered ventilation system may assist the spread of smoke unless it is designed to shut down automatically if fire is detected. The ducting of any ventilation system may also provide a pathway for the spread of heat and smoke and this needs to be considered to prevent potential spread between compartments or sub-compartments. The integrity of compartments and sub-compartments can be achieved by means of fire dampers which close automatically and hold back fire and smoke in the event of a fire.

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

Fire Spread on Internal Linings

160. 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 care homes 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.

161. Multiple layers of wallpaper or certain paints 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 of paper or paints are not recommended when carrying out refurbishment work involving the re-decoration of wall and ceiling surfaces.

162. Technical Annexe 13.5 contains benchmarks against which existing provision can be compared.

Fire Spread on External Walls

163. 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 on the external walls of the building and pose a risk especially where there are high dependency residents and extended evacuation times. Fire can spread horizontally along the face of the building and vertically up the face of the building and this can result in extensive fire spread both externally and internally.

164. Technical Annexe 13.6 contains benchmarks against which existing provision can be compared.

Fire Spread from Neighbouring Buildings

165. 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 risk to occupants. In Some building configurations, such as a courtyard, the fire spread potential may be from one compartment in the building across an open space to another compartment of the same building. This is of particular relevance if any external wall cladding is of a combustible material. The results of the assessment should then be considered and appropriate fire safety measures put in place.

166. Technical Annexe 13.7 contains benchmarks against which existing provision can be compared.

Chapter 8: MEANS OF ESCAPE

167. Once a fire has started, been detected and a warning given, everyone in the care home 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 continue to escape to an unenclosed 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 should be taken of the nature of the residents.

168. 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.

169. 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. Other than in exceptional 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).

170. The people present in care homes 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.

171. 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. The outcome of a fire safety risk assessment may necessitate an increase in the number of escape routes or the restriction of residents in certain areas of the premises.

172. Technical Annexe 13.3 and 13.8 contain benchmarks against which existing provision can be compared.

Chapter 9: ENSURING THAT MEANS OF ESCAPE CAN BE USED

173. 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.

174. This chapter considers

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

Escape route lighting

175. 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.

176. Technical Annexe 13.10 contains benchmarks against which existing provision can be compared.

Emergency lighting

177. 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 may also be provided on a wider scale to allow some of the normal functions of the premises to continue, in event of interruption to the mains supply.

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

179. Technical Annexe 13.10 contains benchmarks against which existing provision can be compared.

Signs

180. Fire signs 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. There is also a need to consider the requirement for building users who are visually impaired.

181. **Escape route signs** clearly indicate exits not in normal use. 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.

182. **Other safety 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.

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

184. Technical Annexe 13.11 contains further information and benchmarks against which existing provision can be compared.

Notices

185. 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.

186. Notices containing details of the emergency fire action plan specific to the care home 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.

Chapter 10: MEANS FOR DETECTING FIRE AND GIVING WARNING

187. It is essential that an outbreak of fire in a care home should be detected at an early stage so that the occupants are alerted and the emergency fire action plan 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.

188. Care homes should be provided with a fire warning and automatic detection system which can be operated both by a person and automatically by means of the automatic fire detectors. The provision of suitable fire detection and warning system (fire alarm system) 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.

189. Some of the features of a fire alarm system may be:

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

Fire Alarm Features

190. **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.

191. **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.

192. **Sounders** are provided to alert occupants. In all cases, the sounders of a fire alarm system should be capable of alerting the staff. However, it may be appropriate for the system to simultaneously alert all the residents as well, in light of their dependency and the emergency fire action plan for the premises. As an alternative to conventional sounders, a

specially designed voice-alarm may be suitable for some premises. **Voice alarm systems** can provide significant benefits in terms of reduced response time and improved information dissemination: factors that are critical to staff in a care home.

193. 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.

194. 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 and Fire and Rescue Service use taking account of the fire and evacuation strategy that is adopted for the building.

195. 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.

196. 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

197. 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.

198. Operation of the fire alarm system should cause the following:

- Automatic closure of self closing doors which are normally held in the open position by automatic release devices;
- Automatic closure of self closing doors which are fitted with swing free arms;
- Internal swing doors with automatic opening should have the automatic opening facility disabled, this is particularly essential for fire resisting doors;
- Electronically powered locks on doors should return to the unlocked position; and
- Automatic opening of exit doors which satisfy the second bullet point in paragraph 27 of Technical Annex 13.9.

Remote Monitoring

199. 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.

200. In care homes, in the event of fire an early call to the Fire and Rescue Service should be made. There will be conflicting demands on staff in the event of fire and the provision of remote monitoring will ensure an early call is made. Even where there is monitoring by a

remote alarm receiving centre, a back up 999 call should also be made to the Fire and Rescue Service.

Reducing False Alarms

201. 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. False alarms should not be seen as inevitable: each one should be investigated and the cause identified. Where remedial action is required to prevent a recurrence, such as changing a detector head or re-siting a call point, then this should be implemented. A fire alarm system should never be disabled by staff; if it is posing a problem then specialist help should be sought.

202. Information on maintenance and testing of fire alarm systems is contained in Chapter 5.

203. Technical Annexe 13.12 contains further information and benchmarks against which existing provision can be compared.

Chapter 11: MEANS FOR FIGHTING FIRE

204. 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

205. Portable fire-fighting equipment should be provided in care homes for staff use. Fire-fighting equipment can be used to prevent a small fire 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.

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

Table 1 Class of fire

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

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

207. 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.

208. 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.

209. A **Foam Extinguisher (Red body with cream label/band)** 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.

210. A **Powder Extinguisher (Red body with blue label/band)** 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. Since powder does not cool a fire appreciably, it should be noted that the fire may re-ignite.

211. A **Carbon Dioxide (CO_2) Extinguisher (Red body with black label/band)** 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. It should be noted that CO_2 may not cool a fire appreciably and the fire may therefore re-ignite.

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

213. In small premises, having one or two **portable fire extinguishers** of the appropriate type and readily available for use, may be all that is necessary. In larger, more complex premises, more extinguishers will be required. Portable extinguishers should be simple to operate and readily accessible. They should also be within the handling capabilities of staff who may be called upon to use them. It may also be necessary to indicate the location of extinguishers by suitable signs.

214. Technical Annexe 13.13 contains further information on portable fire extinguishers and benchmarks against which existing provision can be compared.

215. 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. There are disadvantages with hose reels that should be considered; when deployed a hose reel may obstruct doors causing the spread of smoke, and it may pose an obstacle to the movement or escape of residents.

216. A **fire blanket** is appropriate where there are containers of cooking oil or fat and there is the potential for fire. A fire blanket may be used to smother a small fire involving oil or fat.

217. 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).

Automatic Life Safety Fire Suppression Systems

218. 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.

219. 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 outside the room involved in fire 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.

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

221. Benchmarks for sprinklers are contained in Technical Annexe 13.14.

Chapter 12: FIRE AND RESCUE SERVICE FACILITIES

222. Building Regulations and other legislation may have required premises to be provided with 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. Supplementary Annexe 14.1 contains further reference information relative to current standards for Fire and Rescue Service facilities.

223. It will also be helpful to provide information to the Fire and Rescue Service if there is a temporary loss of a fire-fighting facility or a change in access arrangements.

Fire and Rescue Service Access

224. Buildings that have been constructed to Building Regulations may 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

225. 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

226. 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 Fire and Rescue Service Facilities

227. There are other features which may occasionally be found in care homes 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

Introduction

The following pages set out more information about fire safety measures. Benchmarks are offered for use 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 this poses a risk which requires action. Where this is the case then upgrading may remove or reduce the risk.

It is important that the status of the Technical Annexes in this guide is understood. Most of the benchmarks in the Technical Annexes are a modification of the Building Regulation standards and associated Technical Handbook guidance that applies to new buildings. The intent of the modification is to provide benchmarks which can be used as a comparison in existing premises. It may be reasonably practicable to upgrade to a particular benchmark in some situations but not in others. The aim is to use the relevant benchmarks as guidance in order to achieve an overall degree of safety or reduction in risk consistent with that required as a result of the risk assessment. All premises are different and each risk assessment will be site specific and decisions in respect of fire safety standards should at all times be based on judgement of risk.

There are 15 Technical Annexes:

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

Technical Annexe 13.1

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.

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements. If this is not possible or practicable the provision of an automatic life safety fire suppression system as detailed in Technical Annexe 13.14 may be considered as an alternative.

1. Care homes with a total storey area of more than 1500 m^2 should be sub-divided by compartment floors, walls, ceilings and fire doors with a medium duration (60 minutes) fire-resistance. Every compartment should be limited to a maximum area of 1500 m^2. 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.

2. In premises with only medium and/or low dependency residents, the compartment walls, floors and doors need only have short duration (30 minutes) fire-resistance, provided the compartment size does not exceed 1500 m^2 and there are no residents sleeping above the ground floor.

3. 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 750 m^2. See Figure a).

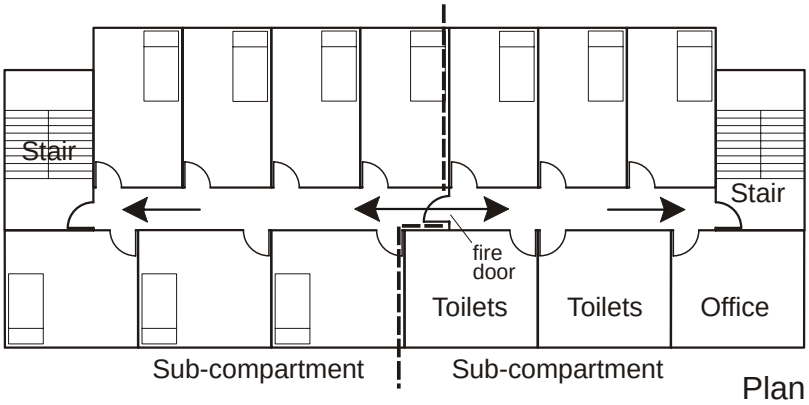


Fig a) - sub division of a fire compartment

4. 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 floors, walls, doors and ceilings with a short duration (30 minutes) fire-resistance:

- Chemical stores;
- Cleaners' rooms;
- Clothes storage;
- Day rooms with a floor area greater than 20 m^2
- Smoking rooms;

- Disposal rooms;
- Lift motor rooms;
- Linen stores;
- Bedrooms;
- Kitchens;
- Laundry rooms;
- Staff changing and locker rooms; and
- Store rooms.

5. 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 3 m 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.

6. 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.

7. 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.

8. 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. All pipes should be fitted with a proprietary sealing system capable of maintaining the fire-resistance of the floor, wall or cavity barrier.

9. Where ventilation ducts penetrate compartments or sub-compartments, fire dampers actuated by smoke detection should be provided to close automatically thereby maintaining the fire-resistance duration of the compartment or sub-compartment concerned. BS 5588 Part 9 provides guidance on design and construction including fire-resisting duct enclosures, fire-resisting ductwork and the use and activation of fire dampers.

10. Any door in a compartment wall, sub compartment wall or fire hazard room should be a self-closing fire door with the same fire-resistance duration as the wall. See also Technical Annexe 13.9.

11. A place of special fire risk should be enclosed by compartment walls with a medium duration (60 minutes) fire resistance. Where a place of special fire risk contains any appliance or equipment using hazardous liquid, the room and any opening in a wall or floor dividing should be constructed in such a manner that, in the event of any liquid spillage, the room will contain all the liquid in the appliance or equipment plus 10%.

Technical Annexe 13.2

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.

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements.

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 constructed from materials that are non-combustible. Where materials are combustible then they should possess at least the same fire-resistance as that stated in paragraph 1, above.

3. The wall should contain no pipes, wires or other services within the wall but where these already exist then they should be fire-stopped and protected by intumescent materials which achieve a medium duration (60 minutes) fire-resistance.

Technical Annexe 13.3

Structural Fire Protection

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

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements. If this is not possible or practicable the provision of an automatic life safety fire suppression system as detailed in Technical Annexe 13.14 may be considered as an alternative.

1. Where there are high dependency residents, all elements of structure (structural frames, load-bearing elements, and floors) should have at least a medium duration (60 minutes) fire-resistance.

2. Where there are some medium dependency residents, all elements of structure should have at least a short duration (30 minutes) fire-resistance, where there are no residents sleeping above the ground floor.

3. Where there are only low dependency residents, all elements of structure should have at least a short duration (30 minutes) fire-resistance.

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, or where the collapse of unrated roof elements would cause the consequential collapse of fire rated elements, or premature collapse of the roof on the means of escape.

5. 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.

6. 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.

Technical Annexe 13.4

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.

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements.

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 sill 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 20 m (10 m where the cavity has surfaces which are Category 1 or less stringent: see Technical Annexe 13.5). Cavities 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 75 mm thick, or where cavities are closed at the top and around openings;
- Below a floor next to the ground where the cavity is either inaccessible or is not more than 1 m high; or
- Formed by external wall or roof cladding, where the inner, outer or other exposed surfaces of the cladding are no less stringent than Category 0 (see Technical Annexe 13.5), and 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;
- 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.

Technical Annexe 13. 5

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.

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements. If this is not possible or practicable the provision of an automatic life safety fire suppression system as detailed in Technical Annexe 13.14 may be considered as an alternative.

1. The wall and ceiling surfaces of internal linings should have a reaction to fire as shown in the table:

Table 2 Surface linings by reference to use by residents

Dependency of the residents	Surface	Rooms not more than $4m^2$ (category)	Rooms $4m^2$ to $30m^2$ (category)	Rooms more than $30m^2$ (category)	Protected zones & unprotected zones* (category)
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

Category 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 when tested to BS 476 part 7 and, when tested in accordance with BS 476: Part 6 has an index of performance (I) not more than 12 and a sub-index (i_1) 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 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, which have been treated to achieve Category 1

2/3 *means the material when tested to BS 476: Part 7 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, 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.

3. 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 70^0 to the horizontal.

4. 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.

5. 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 70^0 or less to the horizontal.

6. The following surfaces need not be taken into account:

- 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.

7. The use of plastics and thermoplastics is a complex issue and outwith the scope of this guidance document. Further guidance on the suitability of plastic or thermoplastic materials can be found in the *Scottish Building Standards Technical Handbook for Non-Domestic Premises*.

Technical Annexe 13.6

Fire Spread On External Walls

This Technical Annexe contains benchmarks in respect of fire spread on external walls, against which the existing level of provision can be compared.

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements.

1. External wall cladding includes non load bearing external wall cladding systems attached to the building structure, for example, clay or concrete tiles, slates, pre cast concrete panels, stone panels, masonry, profile metal sheeting including sandwich panels, weather boarding, thermally insulated external wall rendered systems, glazing systems and other ventilated cladding systems.

2. The external wall cladding should be of a non-combustible material. Where the external wall cladding is combustible then it should achieve a category 0 rating as specified in Technical Annex 13.5.

Technical Annexe 13.7

Fire Spread from Neighbouring Buildings

This Technical Annexe contains benchmarks in respect of fire spread from neighbouring buildings, against which the existing level of provision can be compared.

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements.

1. Where the building is less than 1 m from a boundary or notional boundary, and there is a different building or structure on or within 1 m of that boundary, and from which there is the potential for fire to spread, then the external wall should be at least medium duration (60 minutes) fire-resistance and any supporting element of structure should also have at least the same fire-resistance duration as the external wall. It is probable that there will be unprotected areas (including doors or window opening) with a lower fire-resistance within the wall structure, then these door or window openings should provide a short duration (30 minutes) fire-resistance.

Technical Annexe 13.8

Escape

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

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements. Providing an appropriate number of stairs, escape routes and exits is fundamental to fire safety. Where it is not practical to reduce travel distance, the provision of an automatic life safety fire suppression system, as detailed in Technical Annexe 13.14, may be considered as an alternative.

1. Where there is reference in this annexe to fire doors, see also 'Fire Doors' in Technical Annexe 13.9.

Room occupancy

2. No room intended for sleeping should be used to accommodate more than four people.

Travel Distance

3. 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;
- Another compartment;
- A protected zone; or
- A final exit.

4. 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.

5. 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.

6. **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. Single direction of escape ceases at the point where there are alternative escape routes. See figures a), b) and c).

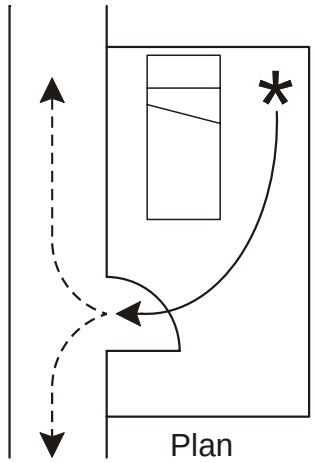


Fig a) - single direction of escape within a room before a choice of escape routes becomes available

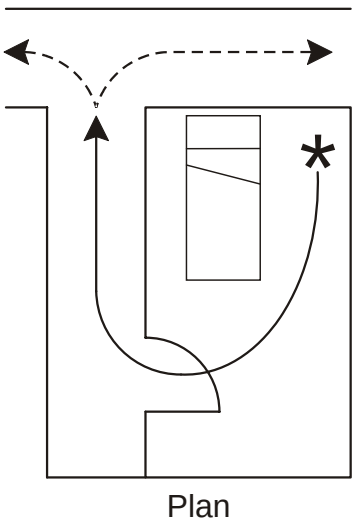


Fig b) - single direction of escape out of room and along a corridor before a choice of escape routes becomes available

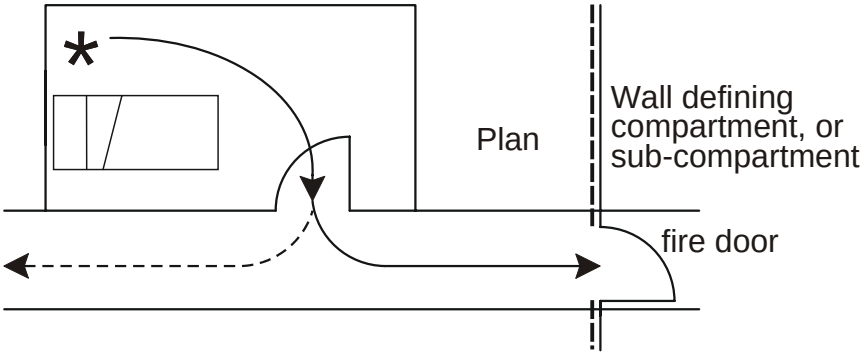


Fig c) - single direction of escape within a room before a choice of escape routes, one of which goes through a fire door into another compartment or sub compartment

7. The assessment of travel distance should be made by reference to Table 3 below:

Table 3 Travel distance by reference to residents and sprinkler provision.

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

* this includes single direction distance.

8. 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

9. An inner room is a room where access to a circulation route can only be achieved by passing through another room (see fig d). The following conditions should apply:

- An inner room should not be a bedroom;
- The access room leading to the inner room should not be a fire hazard room; and
- The maximum travel distance from any point in the inner room to the exit from the access room should not exceed 9 m, unless there are alternative exits from the access room.

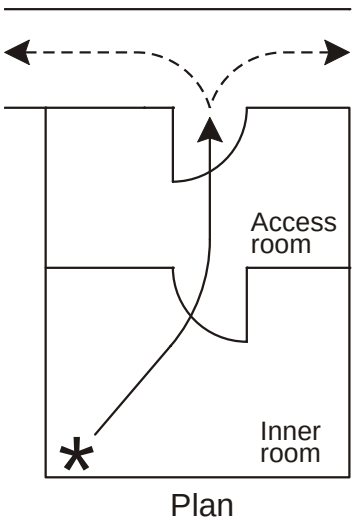


Fig d) - single direction of escape out of an inner room and through an access room before a choice of escape routes becomes available

Escape Routes

10. At least two escape routes should be provided from any storey in a care home. However additional escape routes may be needed. Each sub-compartment should be provided with at least two exits by way of protected zones or unprotected zones to adjoining, but separate compartments or sub-compartments.

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 9 m and then diverge to two exits at an angle of at least 45° plus 2½^{o} 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;
- By way of a protected zone or unprotected zone;
- By way of an unprotected zone to a protected zone;
- By way of a flat roof or access deck (**only suitable for staff use**);
- By way of an exit to an external escape stair; or
- In the case of escape from an inner room not intended to be used as sleeping accommodation, by way of one other room, but not through a place of special fire risk.

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

14. The unobstructed width of each individual escape route from a room or storey should be at least 1200 mm. However, in premises where the rooms or storey are used by low dependency residents, the width may be reduced to not less than 1000 mm. Doorways can

reduce the width of escape routes by 150 mm. This nominal reduction allows for the construction of door frames; however the clear opening width of the doorway should be at least 800 mm. 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.

15. 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

16. 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 single direction of travel more than 4.5 m long and provides access to a point from which more than one direction of escape is possible, it should be divided at that point or points; and
- Where the corridor provides at least two directions of escape and is more than 12 m 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 12 m lengths.

Stairways

17. Every upper storey should be served by at least two escape stairs which are independent of each other and have their own final exit.

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 1200 mm. The effective width of an escape stair is measured between handrails. 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 two or more levels within a single-storey where the difference in level between the highest and lowest level is not more than 1.8 m;
- An external escape stair with a total rise of not more than 1.6 m

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 60S 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 slow 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 700 mm x 1200 mm 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. Where the stair is combustible it should be protected on its underside with material which offers at least a nominal medium duration (60 minutes) fire-resistance. However, this guidance does not apply to:

- Any handrail, balustrade or protective barrier on an escape stair;
- An escape stair which connects two or more levels within a single-storey where the difference in height between the highest and lowest level is not more than 1.8 m;
- An escape stair from a gallery; or
- A floor finish (such as 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 2 m 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 2 m, by construction with a:

- Short duration (30 minutes) fire-resistance where every storey in the building is at a height of not more than 7.5 m above the ground; or
- Medium duration (60 minutes) fire-resistance where any storey is at a height of more than 7.5 m 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. No flammable materials should be stored in these rooms. The types of rooms are:

- Toilets and washrooms; and
- A cleaner's cupboard not more than 3 m^2.

30. More than one toilet, washroom or cleaners' cupboard may be located in a protected zone enclosing an escape stair. The walls, floors and ceiling separating the cleaner's cupboard from the protected zone should have a short duration (30 minutes) fire-resistance. 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 problems for persons 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.

32. The majority of care home residents will not have the capability to safely use an external stair. For these reasons, an external escape stair should only serve a building where:

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

33. 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 of not more than 1.6 m. External escape stairs should be constructed of non-combustible materials.

34. Every part of an external wall (including a door, window or other opening) not more than 2 m 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 2 m from the escape stair should be protected by heat activated sealing devices or systems.

Technical Annexe 13.9

Doors

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

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements. Fire doors are fundamental to the escape process within premises.

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 smoke, hot gases and flame. The gap between the door leaf and the frame is normally fitted with intumescent strips, in either the door or preferably the frame. The strips expand in the early stages of a fire in response to heat and enhance 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 13.8.

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 are required; the manufacturer's instructions should be closely followed. Care should be taken to ensure that any other ironmongery used on doors is not detrimental to the integrity 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 capable person. In nearly all cases the door and glazing should be purchased from a supplier who can provide documentary evidence that the door continues to achieve the required rating.

Bedroom Corridor Doors

6. Where a bedroom opens into a circulation area, a fire occurring in the bedroom or other room opening into the circulation area 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 doors offers protection to the escape route from a fire starting in a bedroom or other room 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 30S door, are of substantial construction and close fitting. Some doors may have the potential to be upgraded to nominal FD 30S standard. A room door will only offer protection to escape routes where the wall between the room 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 self-closing device should be fitted to each fire door and to all 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.

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 care home. 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.

12. Self-closing doors can be fitted with electromagnetic **hold open devices** (which comply to BS 5839: Part 3), 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; or
- 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 may be installed in some cases, subject to risk assessment and correct fitting. However, this type of hold open device is not suitable for use where:

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

14. This type of device could fail to operate where a single fire alarm sounder failure may result in a drop in sound pressure. It also will not operate in response to electrical mains failure or during an alarm fault or failure condition.

15. 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.

16. 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 following advantages:

- It may allow a door to be open at night;
- It may be more compatible with individual residents' needs and preference;
- It facilitates staff procedures when administering treatment or care to the residents; and
- There is no diagonal line of force through the door between separate holding and closing devices therefore little potential for warping.

17. 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

18. 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.

19. For outward opening 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.

20. 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.

21. **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 on any door which provides the only route of escape from the building or part of the building.

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

- on operation of the fire alarm system;
- on loss of power; and
- on actuation of a manual door release unit 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).

23. 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.

24. Electrically powered locks can be operated by electromagnetic or electromechanical means. **Electromechanical** devices mostly 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 should be adhered to.

25. **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

26. In care homes 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 should ensure adequate training for staff and ensure that a robust method for the handing over of keys is in place. Where locking of bedroom doors is permitted, consideration should be given to the type of lock provided on the room door due to the possible need to achieve forced entry for emergency access to the room. In most cases, a suitable locking device will be one that can be easily overcome by force.

Automatic Opening Doors

27. Where an internal swing door is an automatic 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 (but still permitting the door to be manually opened). Automatic opening doors should not be placed across exits unless they are designed in accordance with BS 7036 and are either 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:

28. Automation of fire doors should not detract from their essential function as fire doors. Where doors giving direct access into protected zones, or any other doors required for fire

resisting or smoke stopping purposes, are automatic opening to facilitate movement of occupants, they must be fitted with suitable self-closing devices (see para 11 above) and must have their automatic opening function disabled (but still permit the doors to be manually opened) following: -

a. Actuation of the fire alarm system; or
b. On loss of power or system error.

Technical Annexe 13.10

Escape Lighting

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

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements.

Escape Route Lighting

1. Escape route lighting utilises the artificial lighting within the building. Every part of an escape route should have artificial lighting supplied by a protected circuit that provides a level of illumination not less than that recommended for emergency lighting. The escape route lighting need not be supplied by a protected circuit if the building has an emergency lighting system installed.

2. 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.

3. 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

4. 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 300 m^2 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.

5. The lighting should comply with BS 5266: Part 1 as read in association with Part 7 and 8 (BS EN 1838).

6. 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.

7. 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 8 m² (excluding en suite facilities);
- Fire-fighting equipment;
- Fire alarm call points;
- Equipment that would need to be shut down in an emergency; and
- Lifts.

8. Emergency lighting can be ‘maintained’, ie on all the time, or ‘non-maintained’ which only operates when the normal lighting fails.

Technical Annexe 13.11

Signs

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

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements.

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 m and 2.5 m above the floor. Signs on walls should be mounted between 1.7 m and 2 m above the floor.

2. Signs should be in pictogram form, the pictogram 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. Guidance is available in BS 5499: Parts 4 and 5.

Technical Annexe 13.12

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.

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements.

System type

1. A fire detection and warning system designed, installed and maintained in accordance with the guidance in BS 5839: Part 1 for a Category L1 system is likely to be appropriate for the majority of care homes. A category L1 system is a system designed for the protection of life and which includes automatic detectors installed throughout all areas of the building (including roof spaces and voids). The installation includes that:

a. detection need not be provided in the following locations:
   - sanitary accommodation; or
   - a lockable cupboard with a plan area not more than 1 m^2.

b. the fire alarm should activate on the operation of any of the following: a manual call point; automatic detection; or the operation of any automatic life safety fire suppression system; and

c. the building should be divided into detection zones not extending beyond a single compartment; and where the whole building floor area is less than 300 m^2, each storey should be a detection zone.

2. Rooms opening into circulation areas and escape routes should normally be fitted with heat detection or smoke detection, for care homes 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 to BS 5839: Part 1 may be appropriate. 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 power supply for the system derived from a mains supply and a back up power supply. Older fire alarm systems which are powered from a mains supply only, are not appropriate for care homes.

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 1.4 m (or less for premises with wheelchair users), and not in an area likely to be obstructed.

Remote Monitoring

6. On the actuation of the fire alarm, a signal should be transmitted automatically to a remote alarm receiving centre that is designed and operated in accordance with BS 5979.

Sounders

7. 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, 65dB(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.

8. Account should be taken of the fact that the sound of the fire alarm may be distressing for residents who depend on staff assistance.

Voice Alarm Systems

9. Where a voice alarm system is installed then it should comply with the guidance in BS5839: Part 8. In considering the areas of the care home to be provided with a voice alarm system, the desirability or otherwise of providing residents with information regarding the fire and factors such as background noise levels need to be taken into account. The wording of the message on the voice alarm system should be clear, unambiguous and precise. A coded staff alert message may be desirable in some circumstances.

Technical Annexe 13.13

Portable Fire Extinguishers

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

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements.

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. For example, a floor area of 400 m^2 would have a rating of 26A (400 x 0.065 = 26) which is the total value of class A extinguisher and can be achieved by combinations of extinguishers with different ratings to achieve the total value. 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 200 m^2 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 1 m for larger extinguishers, 1.5 m for smaller ones, to the level of the handle). Ideally no one should have to travel more than 30 m to reach a fire extinguisher. 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 and 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.

Technical Annexe 13.14

Automatic Life Safety Fire Suppression Systems

This Technical Annexe contains benchmarks in respect of automatic life safety suppression systems, against which the existing level of provision can be compared.

Sprinklers

1. If provided in care homes, 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). Components of the system should be as specified and tested in accordance with BS DD 252. Sprinkler heads should be 'quick response type' with a response time index (RTI) of not more than 50 $(ms)^{1/2}$ 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.

Technical Annexe 13.15

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.

Where these benchmarks are not achieved and the results of the risk assessment indicate risk reduction measures are required, consideration should be given to implementing improvements.

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 with ignition sources 0 and 5. BS EN 1021-1 offers an acceptable direct equivalent standard to ignition source 0 of BS 5852.

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. This standard cites the test method from BS 5438. Equivalent international standards that achieve most compatibility with BS 5438 are BS EN ISO 6940 and BS EN ISO 6941.

4. 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.

5. **Polypropylene chairs** should have flame retardant polypropylene shells.

6. Totally **soft play environments** can contain a large volume of foam in various shapes. The covered foam should meet BS 5852 with ignition sources 0 and 5. Where such environments are extensive, as in gymnasia, extra care should be taken and additional precautions may be necessary.

7. **Blankets** should be flame retardant. BS 5866, contains flammability performance standards for individual blankets, or BS 7175, Part 3 which contains a representative fabric sample.

8. **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.

9. **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.

10. **Mattresses** should achieve the flammability standard for a mattress with a waterproof cover as stated in BS 6807: with ignition source 0.

11. **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.

12. **Pillows** should meet the standards in BS 7175: Section 2 with ignition sources 0 and 5.

13. **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 most stringent).

Supplementary Annexe 14.1

Fire and Rescue Service Access and Water Supplies

The following information on Fire and Rescue Service access, Fire and Rescue Service water supply, is for reference purposes only. Persons with duties under the *Fire (Scotland) Act 2005,* as amended, are required to maintain existing facilities under these headings where they have been provided for use or safety of fire-fighters. Chapter 12 deals with maintenance requirements.

Fire and Rescue Service Access

1. Vehicle access to the exterior of a building may be needed to enable high reach appliances, such as turntable ladders and hydraulic platforms to be used, and to enable pumping appliances to supply water and equipment for fire-fighting and rescue activities. The access arrangements increase with building size and height.

2. Vehicle access should be provided to at least one or more elevations of the building, where the principal entrance or entrances are located. Vehicle access routes to more than one elevation may not always be possible due to the constraints of the site. Where this is the case then pedestrian access for Fire and Rescue Service personnel should be provided which consists of a paved (or equivalent) footpath at least 900 mm wide to the principal entrance, or entrances, of the building.

3. Every elevation which is provided with vehicle or pedestrian access for Fire and Rescue Service personnel should have a door giving access to the interior of the building.

4. Where any compartment in the care home exceeds 900 m^2, or the building footprint has a perimeter greater than 150 m, then access should be provided to the other elevations.

5. Fire and Rescue Service vehicles should not have to reverse more than 20 m from the end of an access road (where any dead-end route is more than 20 m long, turning facilities should be provided). Following consultation with the Fire and Rescue Service, it may be recommended that an operating space, or spaces, for a high reach appliance be provided.

Table: Access route for Fire and Rescue Service vehicles

	High reach appliance	**Pumping appliance only**
Minimum width of road between kerbs	3.7 m	3.7 m
Minimum width of gateways etc	3.5 m	3.5 m
Minimum clearance height	4 m	3.7 m
Minimum turning circle between kerbs	26 m	16.8 m
Minimum turning circle between walls	29 m	19.2 m
Minimum axle loading	14 tonnes	14 tonnes

6. For care homes that do not exceed more than three storeys in height, the dimensions for high reach appliances may not be applicable. Following consultation with the Fire and Rescue Service if access is required for pumping appliances only, then the smaller dimensions may be used.

Water Supply for Fire and Rescue Service Use

7. Fire-fighting operations depend on a sufficient supply of water in order to control fire growth and assist in effective rescue operations.

8. At least one external water hydrant should be provided. Hydrants should be positioned so that there is one not more than 60 m from at least one normal entrance to the building and every external elevation of the building is within 60 m of a hydrant. Hydrants should be:

- at least 6 m from the building;
- located adjacent to a parking space for a pumping appliance;
- where a parking space is provided for a fire appliance, the water hydrant should be located adjacent to that parking space;
- accessible for use at all times
- located so that there is a clear route for the fire hose between the hydrant and the building; and
- constructed in accordance with BS 750

9. Each hydrant should be connected to a water service pipe capable of delivering water at a flow rate of at least 1500 litres per minute, provided by a water main vested in a public water authority. Whilst it is desirable to achieve 1500 litres per minute flow rate, it is accepted that the flow rates in the water mains may not achieve this.

10. Localised areas throughout Scotland may not be supplied by mains water or, where mains water is available, the pressure and flow rates in the main may not be sufficient for fire-fighting operations. Skilled pump operators can regulate the water supplies to the fire-fighters and take care not to overdraw the mains especially where the mains pressure and flow rates are poor.

11. Where no piped water supply is available, or there is insufficient pressure and flow in the water main, or an alternative arrangement is proposed, the alternative source of supply should be provided in accordance with the following recommendations:

- A charged static water tank of at least 45,000 litre capacity;
- A spring, river, canal, loch or pond capable of providing or storing at least 45,000 litres of water at all times of the year, to which access, space and a hard standing are available for a pumping appliance; or
- Any other means of providing a water supply for fire-fighting operations considered appropriate by the fire and rescue authority.

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 *Education (Scotland) Act 1980*).
Combustible	Capable of burning in the presence of oxygen.
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.
Element of Structure	Part of the structural frame of a building which is loadbearing.
Emergency door	A door which may be a fire door which is intended to be used only during an emergency.
Emergency lighting	Lighting designed to come into, or remain in, operation automatically in the event of a local and general power failure.
Escape route	A route forming part of the means of escape from any point in the building to the final exit.
Final exit	Termination of an escape route from a building, giving direct access to a street or open space, where people are no longer in danger from fire.
Fire damper	A device within a duct, which operates automatically and will stop the passage of fire and smoke which together with its frame, has the same fire-resistance as that element of building construction through which the duct passes.
Fire door	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.
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 which should be enclosed by floors, walls, doors and ceilings with a short duration (30 minutes) fire-resistance and includes chemical stores; cleaners' rooms; clothes storage; day rooms with a floor area greater than 20 m^2; smoking rooms; disposal rooms; lift motor rooms; linen stores; bedrooms; kitchens; laundry rooms; staff changing and locker rooms; and store rooms.

Fire stopping — The sealing between elements, components or any joints in the construction of the building in order to prevent the passage of fire or smoke through the building.

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.

Means of escape — Safe routes provided for people to travel from any point in a building to an unenclosed safe area beyond the premises including fire safety measures to maintain those routes.

Non-Combustible — The material is certified non-combustible throughout according to the test specified in BS 476: Part 4 or 11.

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:

- 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.

Progressive evacuation — A method of evacuation in a controlled sequence, with those parts of the building at greater risk being evacuated first.

Protected door — A fire door giving access to:

- a protected zone, (including a protected lobby); or
- a fire-fighting shaft; or
- another compartment; or
- an unenclosed safe area beyond the premises; or
- an unenclosed external 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 an unenclosed safe area beyond the premises.

Risk — The potential for a fire to occur (likelihood) and cause death or injury (consequence).

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.
Voice alarm system	A method that provides the means for automatically broadcasting a speech message and warning signal.
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 legislation website: www.infoscotland.com/firelaw

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. Regulation of Care (Scotland) Act 2001

7. Dangerous Substances and Explosive Atmospheres Regulations 2002 (www.hse.gov.uk/fireandexplosion/dsear.htm)

8. Guidance on smoking policies for the NHS, local authorities and care service providers (www.clearingtheairscotland.com)

9. Scottish Health Technical Memorandum 84: Fire risk assessment in residential care premises

10. Historic Scotland Technical Advice Notes:

    TAN 11 Fire Protection Measures in Scottish Historic Buildings
    TAN 14 The Installation of Sprinkler Systems in Historic Buildings
    TAN 22 Fire Risk Management in Heritage Buildings
    TAN 28 Fire Safety Management in Heritage Buildings

11. British Standards: British Standards Institution (www.bsi-global.com). The dates quoted below are those at the time of publication.

    British Standard DD 251: 2000 Sprinkler systems for residential and domestic occupancies. Code of practice (Superseded by BS 9251:2005)

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

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

    British Standard EN 1021: Part 1: 2006. Furniture. Assessment of the ignitability of upholstered furniture. Ignition source smouldering cigarette

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

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

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

British Standard EN 1634: Part 1: 2000 Fire resistance tests for door and shutter assemblies. Fire doors and shutters

British Standard EN 13823:2002 Reaction to fire tests for building products. Building products excluding floorings exposed to the thermal attack by a single burning item

British Standard EN ISO 6940:2004 Textile fabrics. Burning behaviour. Determination of ease of ignition of vertically oriented specimens

British Standard EN ISO 6941:2003 Textile fabrics. Burning behaviour. Measurement of flame spread properties of vertically oriented specimens

British Standard EN ISO 11925: Part 2:2002 Reaction to fire tests. Ignitability of building products subjected to direct impingement of flame. Single-flame source test

British Standard 476: Part 4: 1970 Fire tests on building materials and structures – Non-combustibility test for materials.

British Standard 476: Part 6:1989 Fire tests on building materials and structures. Method of test for fire propagation for products

British Standard 476: Part 7:1997 Fire tests on building materials and structures. Method of test to determine the classification of the surface spread of flame of products

British Standard 476: Part 11: 1982 Fire tests on building materials and structures – Method for classification of the surface spread of flame of products.

British Standard 476: Part 22:1987 Fire tests on building materials and structures. Methods for determination of the fire resistance of non-loadbearing elements of construction

British Standard 5266: Part 1: 2005 Emergency lighting. Code of practice for the emergency lighting of premises.

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

British Standard 5266: Part 8: 2004 Emergency escape lighting systems (BS EN 50172: 2004).

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

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

British Standard 5438:1976 Methods of test for flammability of vertically oriented textile fabrics and fabric assemblies subjected to a small igniting flame

British Standard 5438:1989 Methods of test for flammability of textile fabrics when subjected to a small igniting flame applied to the face or bottom edge of vertically oriented specimens

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

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

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 5588: Part 9: 1999 Fire precautions in the design construction and use of buildings – Part 9: Code of practice for ventilation and air conditioning ductwork.

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

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 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 5839: Part 8:1998 Fire detection and fire alarm systems for buildings. Code of practice for the design, installation, commissioning, and maintenance of voice alarm systems

British Standard 5852: 2006: Methods of test for assessment of ignitability of upholstered seating by smouldering and flaming ignition sources

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

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

British Standard 5979:2000 Code of practice for remote centres receiving signals from security systems

British Standard 6807: 2006: Methods of test for assessment of the ignitability of mattresses, upholstered divans and upholstered bed bases with flaming types of primary and secondary sources of ignition

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

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

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