

Northern Ireland
Firecode

**Health Technical
Memorandum 84**

Fire risk assessment in
residential care premises

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Fire safety checklist summary sheet

About this publication

This Northern Ireland Health Technical Memorandum is an important component of Northern Ireland Firecode. It provides an approach to achieving acceptable standards of fire safety in residential care premises. It provides guidance for new and existing premises used for the purposes of residential care establishments.

The interaction between physical fire precautions, fire hazards, the number of residents, the management policies and the availability of adequately trained staff will determine the overall level of fire safety within the residential care premises.

The primary remit of Firecode is the safety of patients, visitors and staff. An effective combination of Fire/Safety measures should be selected, taking into account the following:

- the guidance in this memorandum;
- the relevant guidance contained in other parts of Northern Ireland Firecode;
- all relevant legislation and statutes;
- the approval of building control and any advice given by the Northern Ireland Fire and Rescue Service.

1. Introduction and scope

General application

- 1.1 NIHTM 84 provides an appropriate standard for Fire Safety in premises as outlined in section 1.4 below. NIHTM84 should not be considered as a stand alone document but should be read in conjunction with the other documents comprising the Firecode suite.
- 1.2 NIHTM 84 provides guidance on assessing fire precautions in new and existing premises. In preparing the guidance it has been assumed that when the premises were built or converted, they complied with the relevant standards applicable current at the time of approval. NIHTM84, as part of Firecode is a 'Deemed to Comply' document which can be used to achieve compliance with the Northern Ireland Building Regulations.
- 1.3 NIHTM 84 also provides guidance on the issues listed below and has been updated to reflect the requirements of current legislation and British Standards.
- detection and alarm systems;
 - textiles and furniture;
 - fire safety training;
 - bedding and sleepwear;
 - fire signs and notices;
 - manual fire-fighting equipment.
- 1.4 The guidance is appropriate for premises used for the purposes of establishments as set out in the Health and Personal Social Services (Quality, Improvement and Regulation) (Northern Ireland) Order 2003 i.e.;
- children's homes
 - nursing homes
 - residential care homes

However, it should not be used for premises where bedrooms are located on a floor which is four or more storeys above the ground.

- 1.5 The guidance replaces all previous versions.

Philosophy

- 1.6 Residential care premises are home for many people. Therefore, in providing an acceptable level of fire safety, there should be recognition of the need to maintain a homely, non-institutionalised environment. This document attempts to achieve this by considering the full range of issues which affect fire safety in residential care premises, including:
- the number of residents;
 - the physical abilities of the patients;
 - fire hazards within the premises;
 - management policies;
 - the availability of sufficient staff adequately trained in fire safety;
 - the physical fire precautions;
 - the levels of security required.
- 1.7 Where residential care premises include a significant non-residential function, for example a daycentre or a training workshop for non-residents, it may be appropriate to consider the fire safety of these areas separately and to refer to more appropriate guidance should that be available.

Existing residential care premises

- 1.8 This document provides guidance on assessing fire precautions in existing residential care premises:
- Paragraphs 4.1 to 4.6 provide guidance on the acceptable standards to be applied in relation to fire hazards:
 - 4.1: Ignition sources – management issues;
 - 4.2: Ignition sources – fire hazard rooms;
 - 4.3: Combustible materials – surface finishes;
 - 4.4: Combustible materials – textiles and furniture;
 - 4.5: Combustible materials – bedding and sleepwear;
 - 4.6: Combustible materials – other materials.
 - Paragraphs 4.7 and 4.8 provide guidance on the effective management of fire safety within the premises:

4.7: Prevention – management;

4.8: Prevention – training.

- Paragraphs 4.9 to 4.20 provide guidance on the level of physical fire precautions which should be provided and maintained in existing buildings:

4.9: Prevention – fire notices and signs;

4.10: Communications – alarm and detection systems;

4.11: Means of escape – travel distances;

4.12: Means of escape – refuge;

4.13: Means of escape – bedrooms;

4.14: Means of escape – stairways;

4.15: Means of escape – security;

4.16: Means of escape – emergency lighting;

4.17: Containment – structural elements;

4.18: Containment – compartmentation;

4.19: Containment – sub-division of concealed spaces;

4.20: Extinguishment – manual fire-fighting equipment.

- 1.9 The interdependency of managerial and physical fire precautions cannot be over-stressed and for this reason any fire safety strategy for residential care premises should cover all the hazards and precautions outlined in this document. The proposed management provisions should be discussed with the Northern Ireland Fire and Rescue Service.

New residential care premises

- 1.10 This document may also be used to determine the physical fire precautions, which will be appropriate for new residential care premises. It is equally appropriate where the use of an existing building is to be changed to provide residential care.

With new buildings (or where there is a change of use) designers should provide the physical fire precautions as described in sections 4.1 to 4.21.

Size of premises

- 1.11 Residential care premises vary greatly in size and in the number of residents. Occasionally a distinction is made between the standards appropriate for different sizes, and for the purposes of this guide they will be divided into two categories:

- Medium premises 1 - 9 residents;
- Large premises 10 or more residents.

Use by competent persons

- 1.12 This document should be used by competent persons employed as:
- Property/Estates/Building/Engineering Officers, Facilities Managers and Health/Fire Safety staff employed by a Trust;
 - Architectural, Building and Engineering Consultants;
 - Building Control Officers;
 - Fire Safety Consultants;
 - Northern Ireland Fire and Rescue Service officers.

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

Consultation

- 1.13 Due to the often conflicting requirements between fire safety and nursing care, it is essential that early consultation takes place between the design team, the client, and all relevant enforcing authorities. Depending on the nature of the scheme it may also be advantageous to involve the client's insurers in the consultation process.
- 1.14 The guidance in this document should reduce the risk to patients, visitors and staff as far as reasonably practicable.

Fire safety during building operations

- 1.15 A significant number of fires occur as a result of building activity. The site activities of contractors should be adequately supervised and controlled. It should be ensured that adequate precautions against fire are in place and regular contact with contractors is maintained to ensure compliance with the agreed fire safety policy.
- 1.16 Guidance on fire safety on construction sites is provided by:
- 'Fire prevention on construction sites', a joint Code of Practice published by the Building Employers Confederation, the Loss Prevention Council, and the National Contractors Group;
 - 'Standard fire precautions for contractors engaged on Crown works', published by Department of the Environment, The Stationery Office
 - 'Designing for health and safety in construction' published by the Health and Safety Executive;
 - 'The Construction (Health, Safety and Welfare) Regulations'

Special consideration should be given to situations where extensions or alterations are being carried out in existing and occupied residential care premises. In these cases, specific guidance should also be sought from the Fire Safety Advisor.

Other Northern Ireland Firecode guidance

1.17 This NIHTM should also be read in conjunction with the guidance contained in the latest revisions of the following Northern Ireland Firecode documents:

NIHTM 81,	Fire precautions in new Healthcare Premises;
NIHTM 81 Part 2	Guidance on the Fire Engineering of Healthcare Premises
NIHTM 82,	Alarm and detection systems;
NIHTM 82, Supp A	Automatic fire control systems and voice alarm systems
NIHTM 83,	Fire safety in healthcare premises – General fire precautions;
NIHTM 83 Supp A	Fire safety of Atria
NIHTM 85,	Fire precautions in existing healthcare premises;
NIHTM 86,	Fire risk assessment Part 1. – Community Healthcare Premises Part 2 - Healthcare Premises
NIHTM 87,	Textiles and furniture;
NIFPN 3,	Escape bed lifts;
NIFPN 4,	Hospital main kitchens;
NIFPN 5,	Commercial enterprises on hospital premises;
NIFPN 6,	Wilful fire raising
NIFPN 7,	Fire precautions in patient hotels;
NIFPN 10,	Laboratories on hospital premises.
NIFPN11	Reducing unwanted fire signals in Healthcare Premises

Other legislation

1.18 Other relevant legislation includes:

- Fire Safety Regulations (Northern Ireland) 2010
- Fire and Rescue Services (Northern Ireland) Order 2006
- The Construction (Design and Management) Regulations (Northern Ireland) 2007
- The Management of Health and Safety at Work Regulations (Northern Ireland) 2000
- Disability Discrimination Northern Ireland Order 2006
- HPSS Order + Associated Regulations and Statements of minimum Care Standards
- Health and Personal Social Services (Quality, Improvement and Regulation) (Northern Ireland) Order 2003
- The Nursing Homes Regulations (Northern Ireland) 2005
- The Residential Care Homes Regulations (Northern Ireland) 2005
- The Children's Homes Regulations (Northern Ireland) 2005

2. Glossary of terms

The standard terms specified for 'hospitals' apply to all healthcare premises where there is patient access. The following additional definitions also apply:

- **circulation space:** the communication routes both within the department/management unit and giving access to other parts of the hospital, and to all necessary fire escape exits;
- **fire hazard:** a set of conditions in the operation of a product or system with the potential for initiating a fire;
- **fire precautions:** measures which can be taken to reduce the likelihood of ignition occurring and/or to mitigate the consequences should ignition occur. Precautions are considered under five headings, each of which is defined below:
 - a. **prevention:** precautions to control potential ignition and fuel sources, to ensure that fires do not start; prevention also includes general fire precautions;
 - b. **communications/alarm and detection:** precautions which inform the occupants and Northern Ireland Fire and Rescue Service when a fire starts;
 - c. **means of escape:** precautions which enable the occupants of the building to escape to a place of safety away from the effects of the fire;
 - d. **containment:** precautions which contain the fire to the smallest possible area, and control the threat to life, safety and the extent of property damage;
 - e. **extinguishment:** precautions, which ensure that the fire can be extinguished quickly and with minimum disturbance to the function of the hospital and damage to its premises.
- **fire resistance:** ability of an element of building construction, component or structure to fulfill, for a stated period of time, the required load-bearing capacity, fire integrity and/or thermal insulation and/or other expected duty in a standard fire-resistance test;
- **ignition sources:** heat sources or flames which may cause ignition;
- **progressive horizontal evacuation:** evacuation of patients away from a fire into a fire-free compartment or sub-compartment on the same level;
- **protected shaft:** a shaft which enables persons, air or objects to pass from one compartment to another, and which is enclosed with fire-resisting construction;
- **refuge :** a place of temporary safety within a building; this should be adjoining compartment or sub-compartment capable of holding all those threatened, without a significant change in level and from which there is potential for further escape should that become necessary;

3. Fire risk assessment in existing premises

- 3.1 This document can be used to undertake an assessment of fire precautions in existing residential care premises. To conduct such an assessment the six stages set out below should be followed using the standards appropriate for the size of the premises i.e.; medium or large.

Stage one: people

- 3.2 The number, vulnerability and level of assistance required for safe evacuation should be assessed for all patients, residents and young people. The safety of staff and visitors should also be fully considered. By assessing the risk to patients, residents and young people who are likely to be the most vulnerable in a fire, the responsibility to assess the risk to the staff and visitors should also have been partly fulfilled.

Stage two: hazards

- 3.3 Identify and assess the fire hazards in the residential care premises using the guidance in paragraphs 4.1 – 4.6:
- 4.1: Ignition sources – management issues;
 - 4.2: Ignition sources – fire hazard rooms;
 - 4.3: Combustible materials – surface finishes;
 - 4.4: Combustible materials – textiles and furniture;
 - 4.5: Combustible materials – bedding and sleepwear;
 - 4.6: Combustible materials – other materials.

Consideration should also be given to any source of oxygen or the siting of hand gel dispensers which may impact on the spread of fire.

Stage three: precautions

- 3.4 Use the guidance in paragraphs 4.7 – 4.20 to assess the fire precautions and fire safety management in the residential care premises:
- 4.7: Prevention – management;

- 4.8: Prevention – training;
- 4.9: Prevention – fire notices and signs;
- 4.10: Communications – alarm and detection systems;
- 4.11: Means of escape – travel distances;
- 4.12: Means of escape – refuge;
- 4.13: Means of escape – bedrooms;
- 4.14: Means of escape – stairways;
- 4.15: Means of escape – security;
- 4.16: Means of escape – emergency lighting;
- 4.17: Containment – structural elements;
- 4.18: Containment – compartmentation;
- 4.19: Containment – sub-division of concealed spaces;
- 4.20: Extinguishment – manual fire-fighting equipment.

3.5 The process of assessment should include a combination of practice observation, visual survey of the premises, desktop analysis of plans, policies and records and discussions with management and staff. NIHTM 84 is only a guide to identifying the level of fire safety and it is not a precise tool. It is a matter of professional judgement as to what degree of tolerance can be expected in the assessment and this is one reason why the competence of assessors to conduct fire risk assessments is essential.

Stage four: assessment record

3.6 The significant findings of the assessment should be recorded in writing. Where the hazard/precaution complies with the specified requirement it is acceptable. A sample fire safety audit sheet is provided in [Appendix 1](#), and it is recommended that one of these be completed for each residential care premise.

Stage five: action

3.7 Having completed the assessment, appropriate action should be taken to deal with any hazards/precautions which have been identified as unacceptable. Such action may be:

- to remove or reduce any of the fire hazards identified as unacceptable;
- to improve the existing fire precautions identified as unacceptable; and/or
- to undertake an analysis of the impact of the unacceptable hazard/precaution on the level of safety in the building and hence to:
 - i. identify appropriate remedial work; and/or
 - ii. review management provisions.

Stage six: Review

3.8 Having completed the process of assessment and undertaken any required improvement works and/or changes to management procedures, it will be necessary to establish a system for auditing the assessment to ensure that it remains valid. The assessment should be reviewed, and if necessary revised and actioned each year or as required:

- there is reason to believe that it is no longer realistic; or
- there has been a significant change in the activity carried out in the premises; or
- there has been a significant change in the number or dependency of the residents.

4. Fire Safety Audit Guidance

Hazards

Ignition sources – management issues

- 4.1 Smoking should comply with the Smoking Regulations (Northern Ireland) Order 2006. Where smoking is permitted, sufficient and suitably placed ashtrays should be provided and inspections made at regular intervals, and about half an hour after the smoking areas have been vacated for the night. This is to ensure that the discarded smoking materials are removed and that they will not ignite other materials.

No gas or electric cookers or portable heating appliances should be located within circulation spaces.

Electrical:

- instructions should be readily available for all equipment;
- extension leads, adaptors etc. should only be used subject to the advice of a suitably qualified member of staff;
- electric blankets should be maintained and serviced in accordance with the manufacturers' guidance;
- the wiring of plugs should be carried out by competent persons;
- electrical equipment should only be used for its intended purpose;
- all new electrical fittings and installations should be checked by a qualified person prior to operation and comply with the requirements of BS 7617 and current IEE regulations.

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

An effective programme of planned preventative maintenance should be operated throughout the premises with an agreed procedure for reporting faults. Once reported, action should be taken to repair any faults or otherwise ensure that the equipment is made safe.

Ignition sources – fire hazard rooms

4.2 Certain rooms within patient access areas of healthcare premises, by their use, constitute a particular fire hazard. The boundaries of these rooms should be regarded as the enclosing construction and be of fire resisting construction to ensure that they do not present a serious hazard. Such rooms may include:

- kitchens;
- laundry rooms;
- stores for highly flammable or combustible materials (e.g. linen stores);
- smoking rooms;
- lift motor rooms;
- dayrooms
- Boiler / Plant rooms
- Switch rooms

Fire hazard rooms must comply with the requirements for sub-compartmentation. Walls may be terminated at ceiling level provided that the ceiling is non-demountable and that openings in the ceiling comply with the requirements of NIHTM85.

Combustible materials – surface finishes

4.3 To inhibit the spread of fire within the building the internal linings should:

- offer adequate resistance to the spread of flame over their surfaces; and
- where they are located in a circulation space, have a low rate of heat release when ignited.

The wall and ceiling finishes must comply with the requirements for internal linings.

The finish applied to a wall, floor or ceiling can contribute to the spread of a fire. Some finishes will allow fire to transfer from one area to another very quickly by 'surface spread of flame'. This not only makes the fire difficult to control, but provides additional fuel, which will increase the severity of the fire.

Small areas with finishes which have a lower level of fire safety performance than specified, are permitted provided that they do not amount to more than 5% of the total wall areas eg notice-boards. Where walls are covered by temporary surfaces such as posters, fabrics, prints, decorations, etc, the significance of these need to be considered.

Where walls have been subject to repeated painting over a number of years with gloss paints, the accumulated thickness of paint film may present a problem and provide for rapid transfer of fire over its surface. Where this situation exists, specialist technical advice should be obtained. The use of anti-graffiti and intumescent paints requires careful consideration, especially when they are applied over existing painted surfaces. Full technical guidance should always be obtained from the manufacturer.

Combustible materials – textiles and furniture

- 4.4 Textiles and furniture supplied by the owners and managers should meet the following requirements.

All textiles and furniture should comply with the requirements of the Furniture and Furnishings (Fire) (Safety) Regulations 1993.

When new textiles and furniture are to be purchased they should comply with the requirements of NIHTM 87 'Textiles and furniture'. In addition, NIHTM87 should also be consulted in relation to the upgrading of existing textiles and furniture.

The provision of textiles or furniture by residents should be restricted to their own bedroom. If the bedroom is shared with other residents, or if the items give particular cause for concern, it may be necessary to take extra precautions. Such extra precautions might include the provision of automatic fire detection in the resident's bedroom, where this is not already required under Section 13.

Textile fabrics which are capable of meeting these standards include durably flame retardant treated cotton and 100% flame-retardant polyester. Also suitable, if available, is 100% modacrylic. It should be emphasised that retaining the flame retardant properties is dependent upon correct laundry procedures being followed. Careful note should be taken of all wash and care instructions provided. Advice should be sought from the supplier if no such instructions are provided.

Combustible materials – bedding and sleepwear

- 4.5 Bedding and sleepwear supplied by the owners and managers should meet the following requirements:

All bedding and sleepwear must meet the requirements of NIHTM 87 'Textiles and furniture'.

It is recommended that bedding and sleepwear provided by the residents should also achieve the same standards.

Many products such as mattress overlays, fleeces and underpads are used in the care of residents with, or with a pre-disposition to, pressure sores. They are usually placed within the bed assembly, or on easy chairs or wheelchairs. Where possible these products should meet the requirements of BS7175 Section 3 using ignition sources 0 and 5. However, nursing or medical advice should be sought if there is likely to be a conflict between a resident's needs and fire safety.

Combustible materials – other materials

4.6 The control of combustible materials by attention to 'good housekeeping' can reduce the likelihood of fire. Practices which should be followed are:

- the avoidance of the use of highly flammable materials and liquids wherever possible;
- the appropriate storage and disposal of aerosol sprays, taking into account the quantities involved;
- the care and cleaning of any soft toys in accordance with the manufacturers' instructions in order to maintain the flame retardancy required under the Toys (Safety) Regulations 1995;
- the careful checking of any soft toys donated to the home to ensure that the flame retardancy requirements of the Toys (Safety) Regulations 1995 are achieved;
- the orderly stacking in stores of linen, paper or plastic packaging;
- the storage of equipment and packages in designated areas only, and not in plant rooms, service voids and shafts, circulation space, etc;
- regular checks to prevent the accumulation of rubbish in stairway enclosures and 'out of sight' spaces such as plant rooms, service voids and shafts, basements, dead-end corridors, behind radiators;
- the proper control and disposal of packaging, waste and other combustible rubbish.
- the use of gas appliances and the storage of gas bottles including oxygen should be in accordance with the manufacturers instructions and the current regulations.

Precautions

Prevention - management

4.7 Owners and managers of residential care premises must:

- ensure that they have a clearly defined fire safety policy for the protection of residents, staff and visitors. This should be closely linked to the general health and safety policy of the premises;
- ensure that there is an up-to-date emergency plan based on the risk assessment setting out, among other things:
 - details of the action to be taken by staff in case of fire;
 - the procedure to be followed in the evacuation of the premises in case of fire;
 - the arrangements for calling the Northern Ireland Fire and Rescue Service and for informing them of any special risks.
- ensure that there is an adequate number of persons, at all times, who are to be responsible for supervising and controlling the operation of the emergency plan;
- ensure that a copy of the emergency plan, and the findings of the fire risk assessment are kept in the premises and are available for inspection;
- ensure that there is one named individual with management responsibility for fire safety;
- ensure that fire drills are carried out in compliance with the Fire Plan so that all staff are well versed in an emergency evacuation;
- maintain an up-to-date drawing/plan showing the premises, which indicates automatic detection and alarm systems, means of escape, containment, positioning of fire safety signs and notices, manual fire-fighting equipment, and Northern Ireland Fire and Rescue Service access;
- ensure that all means of escape are maintained so that they can be safely and effectively used at all times;
- ensure that all means provided for emergency lighting, fighting fire, detecting fire and giving warning in case of fire are maintained in efficient working order and regularly tested by a competent person. Where any such means are electrically operated, the necessary power supply should, unless switched off for the purpose of altering, maintaining or testing the electrical system, be available at all times;
- keep records, which are available for inspection, for a minimum of three years, of all tests carried out on equipment for:
 - emergency lighting;
 - fire fighting;
 - fire detection;

- fire alarms;
- keep records of all training and fire drills.

Prevention - training

4.8 Owners and managers of residential care premises should ensure that all staff, including temporary and agency staff, are given appropriate information about, and instruction and training in, the fire precautions to be taken in the premises, including the action to be taken in case of fire.

Information, instruction and training must be given at the start of the person's employment in the residential care premises, and whenever there is a change in the fire risk. It must be repeated in compliance with the Fire Plan and at least twice every year.

Practice fire drills must also be held in compliance with the Fire Plan and at least once every year.

Fire safety training should be specific to the residential care premises and should cover:

- fire prevention;
- the correct action to be taken when a fire is discovered;
- a description of the audible alarm given;
- the correct action to be taken on hearing the alarm;
- the correct action to be taken in specific circumstances e.g should a person's clothing or a pan of fat catch fire;
- evacuation and escape procedures;
- the appreciation of the importance of fire doors and their correct use, and avoidance of abuse;
- use of manual fire-fighting equipment provided, including, where appropriate, practical demonstrations;
- knowledge of the position of fire doors on escape routes.

Fire safety information, instruction and training should be provided by competent persons whether in the normal workplace or elsewhere.

In large premises, practice fire drills should assume conditions in which one or more escape routes are obstructed by smoke. During these drills the fire alarm should be operated by a member of staff who is told of the supposed outbreak and thereafter the fire routine should be rehearsed by the staff as fully as circumstances allow. It may be appropriate to inform the Northern Ireland Fire and Rescue Service of the date and time of such drills in order to prevent false alarms, and in case they wish to be present.

In medium premises, practice fire drills could take the form of a walk over escape routes, checking fire doors, the position of alarms and fire equipment.

Every person identified in the emergency plan as responsible for supervising and controlling the operation of the plan should, be given access to the risk assessment and to the emergency plan, and given such additional instruction as will enable him or her to discharge those responsibilities.

Where possible, every resident should receive appropriate training in fire safety on occupation, and this should be repeated at suitable intervals. Those residents who are able should be encouraged to participate in fire drills.

Prevention – fire notices and signs

- 4.9 The purpose of fire notices is to give concise instructions on the actions to be taken on discovering a fire and on hearing the alarm. Details of the emergency plan relevant to the residential care premises should be included.

The purpose of fire signs is to direct persons towards fire exits, or to provide specific information or warning about particular equipment, doors, rooms, or procedures. They should be recognisable, readable and informative, as they convey essential information to regular and infrequent users of the premises, and the Northern Ireland Fire and Rescue Service. The visibility, illumination and height of display should be carefully considered. Guidance on photo luminescent signage is given in BS 5499, Pt 4, 2000.

Fire notices and signs must comply with the statutory requirements of the Health and Safety (Safety Signs and Signals) Regulations (Northern Ireland) 1996 and BS5499: Part 1: 1990 as appropriate.

In all premises, fire notices must be permanently displayed in conspicuous positions throughout the building and must be specific to that building. Additional notices giving further instruction should be displayed on staff notice boards. Fire signs must be provided, where appropriate, in conspicuous positions but these should not be to the detriment of the homely environment.

Communications – alarm and detection systems

- 4.10 The provision of adequate means of detecting a fire and raising the alarm are of vital importance in residential care premises. Early detection permits time for orderly evacuation and allows time for the fire to be tackled at an earlier stage, therefore reducing the risk to life, safety and damage to the building.

In all new premises, an L1 addressable detection and alarm system designed to comply with the guidance in NIHTM 82 'Fire Detection, Alarm and Control Systems' and BS5839: Part 1 must be provided. This will require the provision of detection in roof, ceiling and raised floor voids.

In existing premises, the adequacy of the detection and alarm system should be reviewed as part of the fire risk assessment.

Where residents may have difficulty in correctly using manual call points, they should only be provided for staff use and sited accordingly.

In large premises the acoustic recommendations for audible alarms vary with the nature of the residential care premises and the level of staffing. Where there are always staff on duty and awake, the sound pressure level of alarms should be 5dB (A) above the notional noise level. Where there are staff asleep on the premises it is also necessary to provide 75 dB (A) at the bedhead in staff bedrooms. The maximum sound pressure level from the alarms should not exceed 105 dB (A) at any point in the premises.

Voice alarm systems provide significant benefits in terms of reduced response time and improved information dissemination, factors that are critical in a healthcare environment. Guidance on the voice alarm systems is given in NIHTM 82 and BS 5588: Part 8.

Means of escape – travel distances

- 4.11 All residential care premises should be provided with adequate means of escape in case of fire which should be capable of being safely and effectively used at all material times.

In new premises, the maximum horizontal travel distance in a single direction of escape before there is a choice of escape routes should not be more than 9m (see Figure 1).

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.

Single direction of escape may include escape from an inner room i.e. a room only accessible through an access room, provided that;

the maximum travel distance from any point in the inner room to the exit from the access room should not exceed 9m, unless there are alternative exits from the access room;

the inner room is not a bedroom; the access room leading to the inner room should not be a fire hazard room.

Maximum travel distance in a single direction of escape before there is a choice of escape routes should not be more than **9** metres.

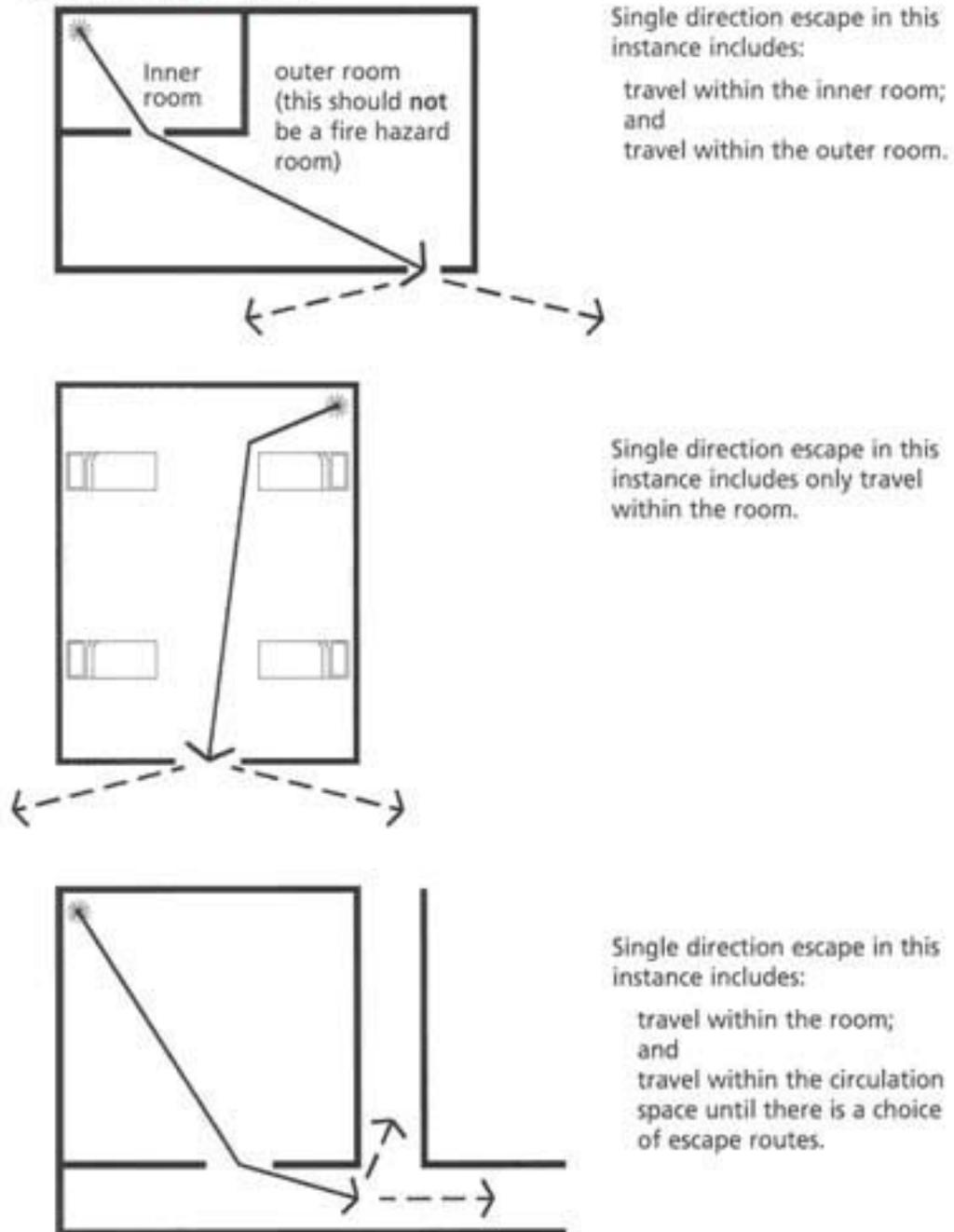


Figure 1

The maximum horizontal travel distance from any point to a protected door in a compartment or sub-compartment wall, or to an escape stairway, or to the outside, should not be more than 18m (see Figure 2).

Escape in two directions

Maximum horizontal travel distance to an adjoining compartment or sub-compartment, or to an escape stairway, or to the outside should not be more than **18** metres.

Note:

Travel distance includes single direction escape

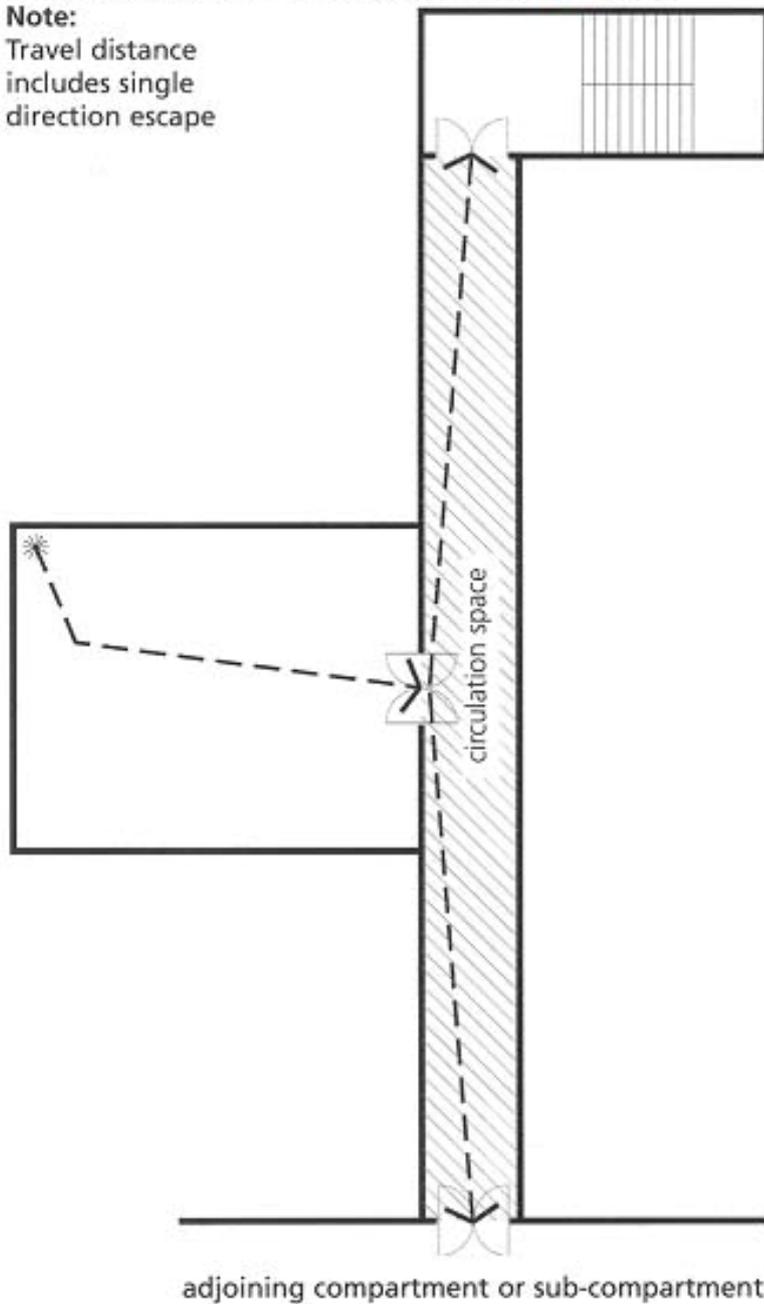


Figure 2

In the measurement of travel distance, consideration must be given to the layout of the walls, partitions and furniture.

The design of circulation spaces should ensure that it is possible to evacuate all residents from the premises by the most appropriate method. In order to assess the suitability of circulation spaces, an emergency plan for the premises, stating the preferred methods of evacuation should be prepared.

Doors across circulation spaces should be fitted with glazed observation panels above and below 'middle rails' to assist wheelchair users.

Means of escape - refuge

- 4.12 In most residential care premises, staff are always present and are expected to play a role in evacuation. Should a fire start, it will be first necessary to evacuate the sub-compartment of origin, and the number of staff available will influence the speed of evacuation. Such evacuation may be progressive horizontal evacuation if there are other sub-compartments to which it is possible to move without a significant change in level, and from where there is the potential for vertical escape to the ground floor, should that become necessary.

The speed of evacuation and the number of residents who can be evacuated before staff are exhausted will depend upon the number of staff available. Therefore the number of resident beds which can be permitted in each sub-compartment depends on the minimum number of staff awake and available on the premises, normally the night-time staffing level.

Owners and managers of residential care premises must ensure that there is an adequate number of persons, at all times, who are to be responsible for supervising and controlling the operation of the emergency plan

The maximum number of resident beds permitted in each sub-compartment is:

Number of awake staff	Max number of beds
Fewer than 2 staff awake at all times	5
2 or 3 staff awake at all times	7
4 or more staff awake at all times	9

Sub-compartment walls must be continued up to the underside of the floor above, or in the case of top floors, to the underside of the external roof surface.

The maximum number of beds in any one room must be no more than four.

Openings must be limited to those for sub-compartment walls.

Means of escape - bedrooms

- 4.13 In all premises, bedrooms (staff and residents) should be fully enclosed in construction which offers 30 minutes fire resistance as a minimum.

The fire resisting enclosure will be formed by the walls, doors and the ceiling, unless the walls are taken up to the underside of the roof.

Doors to the corridors should provide the same level of fire safety performance as the walls, as described in NIHTM85, and *in all new premises*, be fitted with an automatic self-closing device with a 'swing free' arm activated by the operation of the fire detection and alarm system. In areas where points of ligature may be an issue, this should be raised with the fire safety and health and safety officers with recommendations recorded in the fire risk assessment and health and safety file. Where some elements of the physical fire safety precautions need to be amended to address risks associated with ligature hazards, compensating measures should be put in place to ensure that the overall level of fire safety in the premises remains adequate.

In existing premises the need to install suitable automatic self-closing devices including where appropriate 'swing free' arms activated by the operation of the fire detection and alarm system should be continually reviewed as part of the fire safety management arrangements, having regard to the fire risk at all times.

In all situations regardless of the method of closure it is good fire safety practice to ensure that bedroom doors remain closed overnight and at times when bedrooms are not occupied.

It is not expected that bedroom doors will necessarily open in the direction of escape.

It may be necessary to provide the potential for bedroom doors to be locked from the inside. However, if this is required, they should be easy to open from the inside without recourse to a key. In addition, any locking device used would have to be easy to open from the outside of the room by means of a standard key issued to all staff.

Means of escape – stairways

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

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.

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.

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.

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;
- An external escape stair; or
- An escape stair from a gallery.

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.

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.

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.

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.

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.

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.

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.

Certain small rooms as described below may open on to 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 m².

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.

In existing two storey premises where the first floor is a single sub-compartment, it may not be necessary to provide an alternative means of escape to the ground floor or for the stairway to be in a protected shaft if:

- all doors opening onto the stairway (except sanitary accommodation) have self closing devices; and
- no point on the first floor is further than 18m from the final exit to the outside (measured on the first floor, down the stairway, and on the ground floor).

Means of escape - security

- 4.15 In most situations there is no conflict between the requirements for means of escape and security. However it is accepted that in certain situations conflicts may arise, particularly in premises which provide accommodation for people with mental illness, where it may be essential to maintain a high level of supervision during an evacuation.

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

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

Any solution proposed must be discussed and agreed with the relevant enforcing authorities, care provider and other relevant bodies.

Means of escape – emergency lighting

- 4.16 Emergency lighting is that lighting provided for use when the power supply to the normal lighting fails.

Detailed specifications for standby (emergency) and escape lighting provisions and the areas they should cover in healthcare premises, are contained in HTM 06: 'Emergency electrical services' and should be read in conjunction with BS5266 Part 1 and Parts 7 and 8 (BS EN 1838).

Containment – structural elements

- 4.17 The building should be so designed and constructed that, in the event of a fire its fire resistance will be retained for a minimum period of 30 minutes. All structural elements should therefore be able to resist the effects of heat for a minimum period of 30 minutes. The purpose of providing the structure with fire resistance is:

- to minimise the risk to occupants, many of whom may still be in a temporary place of safety within the premises awaiting evacuation;
- to reduce the risk to fire-fighters;
- to reduce the danger to people in the vicinity of the building.

For the purposes of this document structural elements are:

- a column, beam or other member forming part of a structural frame;
- a load-bearing wall;
- a floor.

The minimum level of fire safety performance of all structural elements must comply with the requirements of NIHTM85.

Containment - compartmentation

- 4.18 To inhibit the spread of fire within it, the building should be adequately sub-divided with fire-resisting construction into compartments and sub-compartments.

The building must be sub-divided into compartments and sub-compartments to comply with the requirements of NIHTM85.

Containment – sub-division of concealed spaces

- 4.19 To retard the spread of fire and smoke in concealed spaces within floors, ceilings, roofs or walls, these spaces should be adequately sub-divided.

Concealed spaces must be sub-divided to comply with the requirements of NIHTM85.

Extinguishment – manual fire-fighting equipment

- 4.20 All residential care premises should be provided with adequate means for fire fighting as determined by the fire risk assessment.

In all premises there must be a minimum of two water extinguishers, of 9 litre capacity or equivalent, for every 400m² or part thereof on each floor level. Extinguishers using CO₂ or other mediums should be provided as required. Fire blankets should be provided in all kitchens.

Fire blankets should comply with the 'light duty standard' as defined in BS 6575.

Portable extinguishers should comply with BS7863: 1996, BS EN3: 1996 and be inspected and maintained in accordance with BS5306: Part 3.

4.21 Extinguishment – Access and facilities for the Fire Service

All buildings should be designed and constructed with such reasonable facilities as are necessary to assist the Fire and Rescue Service in ensuring the safety of people in and about the building in the event of a fire. Reasonable provision should also be made for access to the building by Fire Service appliances.

In all premises access for pump appliances should be provided within 45 metres of the building. Where this is not possible, this should be brought to the attention of the Fire and Rescue Service so that alternative arrangements can be made.

In new buildings there should also be:

- A vehicle access route and a vehicular hard standing designed and constructed to the standard given below, capable of taking pump appliances;
- Turning circles in any dead-end vehicle access route which is more than 20m in length;
- Vehicle hard standings, which are as level as possible and do not exceed a gradient of 1 in 12;
- In every elevation to which vehicle access is provided, a door giving access to the interior of the building, and adequate water supplies for possible fire-fighting operations.

Minimum standards for pump appliances are as follows;

Road width (between kerbs)	3.7 metres
Width of gateway	3.1 metres
Turning circle (between kerbs)	16.8 metres radius
Turning circle (between walls)	19.2 metres radius
Clearance height	3.7 metres
Carrying capacity	12.5 tonnes

Appendix – Fire safety checklist - summary sheet

Site

Block/Building

Block/Ward

Fire Site Plan Reference.....

SurveyorDate

Paragraph Reference		Unacceptable	Acceptable	
	HAZARDS			Comments
	<i>IGNITION SOURCES</i>			
4.1	Management Issues			
4.2	Fire hazard rooms			
	<i>COMBUSTIBLE MATERIALS</i>			
4.3	Surface finishes			
4.4	Textiles and furniture			
4.5	Bedding and sleepwear			
4.6	Other materials			
	PRECAUTIONS			
	<i>PREVENTION</i>			
4.7	Management			
4.8	Training			
4.9	Fire notices and signs			
	<i>COMMUNICATIONS</i>			
4.10	Alarm and detection systems			
	<i>MEANS OF ESCAPE</i>			
4.11	Travel distances			
4.12	Refuge			
4.13	Bedrooms			
4.14	Stairways			
4.15	Security			
4.16	Emergency Lighting			
	<i>CONTAINMENT</i>			
4.17	Structural elements			
4.18	Compartmentation			
4.19	Sub-division of concealed spaces			
	<i>EXTINGUISHMENT</i>			
4.20	Manual fire-fighting equipment			
4.21	Access and facilities for the Fire Service			