7.6 Fire risk management for hospitals
Acknowledgments

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Published by the Capital Management Branch, Financial and Corporate Services Division, Victorian Government Department of Human Services.

This publication is available at Department of Human Services Internet address: www.capital.dhs.vic.gov.au/TechnicalGuidelines/FireRiskManagement

Disclaimer

The purpose of these fire risk management guidelines is to provide appropriate levels of fire safety for occupants of a building subject to these Guidelines by enabling appropriately qualified professional advisers, such as registered fire safety engineers and building surveyors, to:

- audit and assess fire risk
- recommend steps to minimise fire risk
- assess and report on acceptable standards of fire safety

in specific settings.

The use of the Guidelines is subject to the following:

a) The Guidelines do not constitute all of the possible fire safety matters that may apply to a specific situation but are provided for assistance in determining appropriate fire safety measures. It is up to individuals acting with appropriate professional advice to determine their application to particular situations.

b) Guidelines 7.3 to 7.10 must be used for purposes only within the range set out in the ‘Introduction’ section at the start of each document.

c) In addition to the fire safety requirements and standards in the Guidelines, owners, occupiers and operators of facilities may be subject to various other statutory, common law and contractual obligations. They must seek advice, including legal advice, on the existence and scope of these obligations.

The Department of Human Services and organisations/individuals involved in the preparation of these documents make no representation that the Guidelines are suitable for any particular situation, and accept no responsibility for any loss or damage arising out of any decision to apply the Guidelines to any particular situation.

Definitions

Defined terms are in *italics* when first used in each guideline. A list of all definitions can be found in Appendix 1 of Guideline 7.1.
Contents

1 Introduction ............................................................................................................................................. 1
  1.1 General ................................................................................................................................................. 1
  1.2 Occupant and staff profiles .................................................................................................................. 3

2 Mandatory fire safety measures ........................................................................................................... 4
  2.1 General ................................................................................................................................................. 4
  2.2 New buildings ....................................................................................................................................... 5
    Smoke detection systems .......................................................................................................................... 5
    Building occupant warning systems ....................................................................................................... 6
    Record keeping and documentation ........................................................................................................ 6
    System maintenance ............................................................................................................................... 7
  2.3 Existing buildings ............................................................................................................................... 7
    Smoke detection systems .......................................................................................................................... 7
    Building occupant warning systems ....................................................................................................... 7
    Record keeping and documentation ........................................................................................................ 7
    System maintenance ............................................................................................................................... 8

3 Fire safety measures to be derived and verified by a fire risk assessment ........................................ 9
  3.1 General ................................................................................................................................................. 9
  3.2 New buildings ....................................................................................................................................... 9
    Automatic fire suppression systems ....................................................................................................... 9
    Construction requirements ....................................................................................................................... 10
    Manual fire fighting equipment ............................................................................................................ 11
    Egress provisions .................................................................................................................................. 11
    Door operation .................................................................................................................................... 12
    Emergency lighting ............................................................................................................................... 12
    Exit signs ............................................................................................................................................. 13
    Manual call points (MCPs) ..................................................................................................................... 13
    Electrical protection ............................................................................................................................... 13
    Appliance safety .................................................................................................................................... 13
    Ducted heating ventilation and air conditioning systems ..................................................................... 14
    Smoke control ..................................................................................................................................... 14
  3.3 Existing buildings ................................................................................................................................ 15
    Automatic fire suppression systems ....................................................................................................... 15
    Construction requirements ....................................................................................................................... 15
    Manual fire fighting equipment ............................................................................................................ 16
    Egress provisions .................................................................................................................................. 16
    Door operation .................................................................................................................................... 16
    Emergency lighting ............................................................................................................................... 16
Exit signs.............................................................................................................................................. 16
Manual call points (MCPs) .................................................................................................................. 16
Electrical protection ............................................................................................................................. 16
Appliance safety ................................................................................................................................... 16
Ducted heating ventilation and air-conditioning systems................................................................. 17
Smoke control ..................................................................................................................................... 17

4 Other measures ............................................................................................................................. 18

Fire Prevention and Fire Safety Management...................................................................................... 18
Fire Emergency Procedures and Training............................................................................................. 18
Fire Orders and Evacuation Plans ......................................................................................................... 19
Occupant capability ............................................................................................................................... 19
Associated life safety issues ................................................................................................................. 19
Protection against external environmental hazards .............................................................................. 19
1 Introduction

1.1 General

1.1.1 This document provides guidance for fire risk management for hospitals\(^1\) owned or operated by the Department of Human Services (the Department) or organisations subject to a service agreement with the department.

1.1.2 A modern hospital is a complex facility which is made up of a number of functional areas. While a large proportion of areas are dedicated to patient care and treatment, a large range of ancillary services need to be housed. There is also a trend towards the provision of additional functions, such as retail outlets, in major hospitals.

1.1.3 The occupant and staff characteristics can also vary considerably. For example, a hospital may include a psychiatric ward or psycho-geriatric ward, acute care, and casualty. All of these have different occupant characteristics and patient-to-staff ratios. These differing characteristics yield potentially different evacuation capabilities, in addition to special needs such as security which can affect fire safety.

1.1.4 Ancillary areas can present significantly different fire hazards and vary widely in importance to the ongoing operation of a facility.

1.1.5 Typical functional areas that demonstrate this diversity include:

- stores
- workshops
- kitchens
- electrical generators
- laundries
- plant rooms
- retail outlets
- flammable liquid stores
- medical records
- waste storage
- pharmacy
- pathology
- medical gas storage

\(^1\) Hospital: A building or part thereof used on a 24-hour basis for medical, obstetrical or surgical care of four or more inpatients and including acute hospitals.
- LPG storage
- changing rooms
- casualty
- medical imaging
- operating theatres
- central sterile services units
- intensive care units
- cardiac units
- obstetrics
- psychiatric wards
- psycho-geriatric wards
- acute care wards
- paediatric wards
- physiotherapy department
- resident doctor, nurse and visitor accommodation
- renal units
- day procedures units
- exit paths and corridors
- atria.

1.1.6 Each functional area must be considered individually, with respect to the objectives of the Department of Human Services guidelines. The consequences and probability of a fire spreading to or from adjacent areas must also be considered as part of the fire safety audit and fire risk assessment.

1.1.7 Generally, patient care areas must be fire and smoke-separated from other areas of the hospital.

1.1.8 It is also expected that there will be sufficient and adequately trained staff on duty at any time to provide assistance to achieve an efficient evacuation in accordance with the fire safety strategy as defined in the fire safety handbook. Once sufficient staff numbers and training requirements have been defined, it is the responsibility of the facility management to ensure they are maintained.

1.1.9 For large and multi-storey facilities, total evacuation may be impractical and could place occupants at unnecessary risk. The concept of progressive horizontal evacuation must be adopted for these facilities, which is consistent with the Building Code of Australia.
Deemed-to-Satisfy provisions for compartmentation. Progressive horizontal evacuation involves moving patients from a fire-affected compartment through a fire/smoke resisting barrier to an adjoining area on the same level. If necessary, the patients may subsequently be evacuated to a further compartment on the same level, or to other levels.

1.1.10 As the height of a hospital building increases, the need for greater sub-compartmentation and additional measures, such as automatic sprinkler systems and emergency lifts increases, unless patients are restricted to the lower levels.

1.2 Occupant and staff profiles

1.2.1 *Occupant profile* and *staff profile* are defined in the Department of Human Services *Capital Development Guideline 7.1: Fire Risk Management Policy and Procedures*.

1.2.2 The typical range of occupant profile and staff profile expected in patient areas of hospitals covered by this guideline is summarised below.

**Occupant Profile:** Type 1 to Type 6

**Staff Profile:** Type 4
2 **Mandatory fire safety measures**

2.1 **General**

2.1.1 Table 2.1 provides a summary of the fire safety precautions and measures that are applicable to hospitals. This list is not necessarily exhaustive.

### Table 2.1: Summary of fire safety precautions and measures

<table>
<thead>
<tr>
<th>Fire Safety Provision</th>
<th>Category*</th>
<th>Specific Requirements and Recommendations</th>
<th>New Buildings</th>
<th>Existing Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic smoke detection</td>
<td>Mandatory</td>
<td>Refer to Sections 2.2.1 to 2.2.4 for guidance.</td>
<td>Refer to Section 2.3.1 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Automatic warning and communication system</td>
<td>Mandatory</td>
<td>Refer to Sections 2.2.5 to 2.2.10 for guidance.</td>
<td>Refer to Section 2.3.2 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Record keeping and documentation</td>
<td>Mandatory</td>
<td>Refer to Sections 2.2.11 to 2.2.13 for guidance.</td>
<td>Refer to Section 2.3.3 for guidance.</td>
<td></td>
</tr>
<tr>
<td>System maintenance</td>
<td>Mandatory</td>
<td>Refer to Sections 2.2.14 to 2.2.16 for guidance.</td>
<td>Refer to Section 2.3.4 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Automatic fire suppression</td>
<td>Need to be clearly demonstrated by quantitative risk assessment</td>
<td>Refer to Sections 3.2.1 to 3.2.9 for guidance.</td>
<td>Refer to Section 3.3.1 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Construction requirements</td>
<td>Consideration Mandatory</td>
<td>Refer to Sections 3.2.10 to 3.2.18 for guidance.</td>
<td>Refer to Sections 3.3.2 to 3.3.3 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Manual fire fighting equipment</td>
<td>Consideration Mandatory</td>
<td>Refer to Sections 3.2.19 to 3.2.24 for guidance.</td>
<td>Refer to Sections 3.3.4 to 3.3.5 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Egress provisions</td>
<td>Consideration Mandatory</td>
<td>Refer to Sections 3.2.25 to 3.2.27 for guidance.</td>
<td>Refer to Sections 3.3.6 to 3.3.7 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Emergency lighting</td>
<td>Consideration Mandatory</td>
<td>Refer to Sections 3.2.28 to 3.2.29 for guidance.</td>
<td>Refer to Section 3.3.8 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Emergency exit signage</td>
<td>Consideration Mandatory</td>
<td>Refer to Sections 3.2.30 to 3.2.31 for guidance.</td>
<td>Refer to Section 3.3.9 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Manual call points</td>
<td>Consideration Mandatory</td>
<td>Refer to Section 3.2.32 to 3.2.33 for guidance.</td>
<td>Refer to Section 3.3.10 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Electrical protection</td>
<td>Consideration Mandatory</td>
<td>Refer to Sections 3.2.34 to 3.2.37 for guidance.</td>
<td>Refer to Sections 3.3.11 to 3.3.14 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Appliance safety</td>
<td>Consideration Mandatory</td>
<td>Refer to Sections 3.2.38 to 3.2.42 for guidance.</td>
<td>Refer to Section 3.3.15 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Ducted HVAC systems</td>
<td>Consideration Mandatory</td>
<td>Refer to Section 3.2.43 for guidance.</td>
<td>Refer to Section 3.3.16 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Active smoke control systems</td>
<td>Need to be clearly demonstrated by quantitative risk assessment</td>
<td>Refer to Section 3.2.44 for guidance.</td>
<td>Refer to Section 3.3.17 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Fire prevention/management</td>
<td>Consideration Mandatory</td>
<td>Refer to Sections 4.1.2 to 4.1.7 for guidance.</td>
<td>Refer to Sections 4.1.2 to 4.1.7 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Fire Safety Provision</td>
<td>Category*</td>
<td>Specific Requirements and Recommendations</td>
<td></td>
<td></td>
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<tr>
<td>----------------------</td>
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<td>-------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency control organisation</td>
<td>Consideration Mandatory</td>
<td>Requirements derived from risk assessment in consultation with facility management.</td>
<td>Refer to Fire and Emergency Response Procedures and Training Framework</td>
<td></td>
</tr>
<tr>
<td>Fire emergency procedures and training</td>
<td>Consideration Mandatory</td>
<td>Refer to Sections 4.1.8 to 4.1.14 for guidance.</td>
<td>Refer to Sections 4.1.8 to 4.1.14 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Fire orders and evacuation plans</td>
<td>Consideration Mandatory</td>
<td>Refer to Section 4.1.15 for guidance.</td>
<td>Refer to Section 4.1.15 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Associated life safety issues</td>
<td>Consideration Mandatory</td>
<td>Refer to Sections 4.1.16 and 4.1.21 for guidance.</td>
<td>Refer to Sections 4.1.16 and 4.1.20 for guidance.</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Need to be demonstrated by risk assessment</td>
<td>Requirements derived from risk assessment.</td>
<td>Requirements derived from risk assessment.</td>
<td></td>
</tr>
</tbody>
</table>

* ‘Mandatory’ indicates there are minimum standards specified in the guideline.

‘Consideration Mandatory’ indicates that the fire safety provisions need to be considered in the risk assessment and requirements are derived from the assessment.

2.1.2 Examples of requirements that may be derived and verified by the fire risk assessment are given in Section 3.

2.1.3 The mandatory measures and precautions with prescribed minimum standards are described in more detail in the remainder of this section. These fire safety precautions must be implemented in all facilities in addition to any other findings of a fire safety audit and risk assessment. These prescribed requirements reflect the importance that the Department of Human Services attaches to these provisions as a fundamental part of its fire risk management strategy.

2.2 New buildings

Smoke detection systems

2.2.1 All patient care buildings must have a smoke detection system in accordance with AS 1670.1 throughout, together with an appropriate occupant warning system as described in Sections 2.2.5 to 2.2.10 to the satisfaction of the fire safety engineer and building surveyor.

2.2.2 Smoke detectors must be installed throughout the building, except in areas such as kitchens, laundries and bathrooms, which may be subject to spurious alarms. Smoke detectors in these areas may be replaced with heat detectors as permitted by the BCA.

2.2.3 To enable staff to respond in a timely manner, the detection and alarm system must provide a means for readily identifying the position of the activated fire detection device(s) and be compatible with the mode of operation of the facility and their emergency procedures. For example, the fire indicator panel and mimic panels could be used to identify the location of the activated device, with the information being replicated on electronic pagers carried by staff.

2.2.4 Consideration must be given to providing an addressable smoke detection system. Larger facilities must provide photo-electric type smoke detectors in patient areas and alternating...
photo-electric and ionisation detectors installed in paths of travel to exits.

**Building occupant warning systems**

2.2.5 An automatic warning/alarm system must be provided which is activated by the building fire detection system. The automatic warning system must provide a warning to staff. A means must also be provided to raise an audible alarm throughout the building for other occupants, subject to Section 2.2.7.

*Note: Good communications are important in any emergency; reliable systems must be provided. This may require back-up power supplies and the provision of other redundancies in the communications systems.*

2.2.6 The A-weighted sound pressure level for an audible alarm (except for the relaxation following) must:

- exceed the noisiest background by at least 15 dBA
- not be less than 65 dBA
- not be more than 105 dBA.

*Note: It is preferable for the maximum sound pressure level not to exceed 95 dBA in occupied areas.*

2.2.7 In patient areas, the audible alarm may be adjusted in volume and content to minimise trauma consistent with the type and condition of patients. Under such circumstances, means to alert and identify the location of the alarm quickly must be provided to staff members.

2.2.8 If the audible alarm is intended to arouse sleeping occupants, the sound pressure levels must not be less than 75 dBA when measured at the pillow position.

2.2.9 Means must also be provided for public announcement and two-way communication between staff in facilities housing more than 30 patients.

2.2.10 Where necessary, consideration must be given to the provision of specific alarms for hearing impaired residents.

**Record keeping and documentation**

2.2.11 A fire safety handbook (FSH) must be prepared by a fire safety engineer. This handbook must define the fire safety strategy for the facility, including the nominated performance of all fire protection systems present. The handbook must also specify requirements for fire emergency, evacuation procedures and training, on which the strategy is based, together with maintenance requirements and inspection procedures. Refer to Guideline 7.2 for more details.

2.2.12 Contact numbers for after hours service, repairs, resetting or checking of equipment, emergency staff or other response, or the fire safety engineer may be included in the fire safety handbook.

2.2.13 Records must be kept of:

- all fire safety installations, including schematics and as built drawings of all the fire protection systems
- evacuation fire drills and training exercises
• fire incidents and alarms.
• maintenance and testing undertaken
• inspection and checks carried out by staff
• details of fire safety issues reported (for example, blocked exits or faulty fire protection equipment), action required and evidence that actions have been completed satisfactorily
• essential safety measures records/reports
• other information required by Capital Development Guideline 7.1; the Fire and Emergency Response Procedures and Training Framework; or as a result of the fire risk assessment.

System maintenance

2.2.14 All fire protection systems, measures and associated building services must be maintained as defined in the fire safety handbook prepared by the fire safety engineer and in accordance with the appropriate Australian Standards and Part 12 of Building Regulations.

2.2.15 Maintenance contracts must be in place, supplemented by staff checks on a regular basis so that the required performance levels are maintained.
Note: Where maintenance contracts are renewed, measures must be in place to ensure that test/maintenance procedures and frequencies for a system continue to satisfy the requirements of the fire safety handbook.

2.2.16 In the detailed design of fire safety equipment, consideration must be given to the life cycle costs of the system and methods of reducing the costs of testing and maintenance by, for example, the incorporation of remote monitoring/test functions.

Testing of complex systems (such as zone pressurisation systems) against the nominated levels of performance determined in the fire risk assessment must also be regularly undertaken and details of the frequency and type of testing included in the fire safety handbook.

2.3 Existing buildings

Smoke detection systems

2.3.1 The requirements for smoke detection systems in existing hospitals are the same as those for new buildings (refer to 2.2.1 to 2.2.4).

Building occupant warning systems

2.3.2 The requirements for building occupant warning systems in existing hospitals are the same as those for new buildings (refer to 2.2.5 to 2.2.9).

Record keeping and documentation

2.3.3 The record keeping and documentation requirements for existing hospitals are the same as those for new buildings (refer to 2.2.11 to 2.2.13).
System maintenance

2.3.4 The requirements for system maintenance in existing hospitals are the same as those for new buildings (refer to Sections 2.2.14 to 2.2.16).
3 Fire safety measures to be derived and verified by a fire risk assessment

3.1 General

3.1.1 The following fire safety measures and precautions must be considered by the fire safety engineer and building surveyor in deriving a fire safety strategy that satisfies the performance requirements of the Building Code of Australia (BCA) and other objectives prescribed in the Department of Human Services Guidelines. The BCA Deemed-to-Satisfy provisions may be used as the initial basis of a fire safety strategy, but it is expected that they will require modification to satisfy the Department of Human Services objectives and provide cost-effective solutions. Examples of typical design solutions for each fire safety measure or precaution are given for illustrative purposes only. These guidelines must not be construed as implying, or establishing, a fire safety benchmark.

3.1.2 It must be noted that the final solution will vary from one facility to another, being tailored to the specific circumstances and reflecting the uniqueness of each facility. The following list must therefore not be regarded as inclusive of all fire safety measures and precautions which need to be considered.

3.2 New buildings

Automatic fire suppression systems

3.2.1 In some hospitals it may be appropriate to install automatic fire suppression systems as part of the fire risk management strategy. Automatic fire suppression systems may be localised or general.

3.2.2 A localised system may be used to address a specific hazard, such as an area with a high fire load and/or potential for ignition, or to protect a critical item of equipment. Suitable systems may include gaseous systems, water mist systems and automatic sprinkler systems.

3.2.3 General systems would usually comprise an automatic sprinkler system. Such systems can be adopted, for example, in applications where:

- the preferred strategy of horizontal evacuation is impractical
- the building height makes a major evacuation impractical

or

- the patient characteristics are such that evacuation is impractical.

3.2.4 Sprinkler systems must be designed generally in accordance with AS 2118.1 or equivalent, but must include residential/fast response sprinkler heads in all patient care areas.

3.2.5 In some specialised areas such as operating theatres and intensive care units where a standard wet pipe system may be inappropriate, pre-action or other engineered systems may be considered. The fire safety engineer must consider the life safety risk versus the risk of breaching infection control structures when examining alternatives.
3.2.6 Sprinklers must be used to complement fire and smoke compartmentation and not necessarily as a direct substitute because:

- the severity of the majority of fires is not sufficient to activate a sprinkler head
- the fire may be shielded from the water discharge
- the sprinkler system may be totally or partially inoperative at the time of the fire.

3.2.7 The area of smoke compartments must not be increased on the sole basis that a sprinkler system has been provided.

3.2.8 Areas without sprinklers must be separated from areas with sprinklers by fire resistant barriers. The level of fire resistance must be derived from considerations of the likely fire severity or the Deemed-to-Satisfy provisions of the BCA. Drencher protection of such walls must not be considered as an acceptable alternative unless:

- an independent water supply is provided to the drenchers
- the drenchers are fitted to the non-protected side of the barrier
- the fire safety engineer and building surveyor are satisfied that:
  - there is sufficient redundancy in the overall fire safety system
  - the drencher protected barrier would provide equivalent performance to an appropriate fire resistant barrier.

3.2.9 The design of the sprinkler system must address the reliability of the system by, for example, considering the provision of monitored valves serving each floor or functional area. This will enable part of the system to be isolated if required without affecting the entire building.

**Construction requirements**

3.2.10 The buildings must have structural members and separating elements that will maintain structural stability and prevent fire spread during a fire to the degree necessary to satisfy the relevant objectives of the Department of Human Services Guidelines (as described in Capital Development Guideline 7.1) and the Performance Requirements of the BCA.

3.2.11 This may require predicting the likely fire severity and calculating the ability of the structural members to withstand exposure to the fire.

3.2.12 Internal stairs and shafts connecting two or more levels must be enclosed in construction having appropriate resistance to fire and smoke spread.

3.2.13 Consideration must be given to provide smoke and fire separation to form compartments, allowing for progressive horizontal evacuation. The BCA prescribes a maximum smoke compartment size of 500 square metres in ward areas. However, the designer needs to address the fire hazard, number and capabilities of patients, availability of staff and the provision of other fire precautions in deriving the size of fire and smoke compartments. In many instances, the number of patients and available staff will be the controlling factor rather than the floor area.

3.2.14 The doors to smoke or fire compartments may be held open by hold-open devices,
automatically release the doors in the event of a fire alarm or upon a power failure, and by a button located close to the door set.  

Note: The Department of Human Services expects some levels of redundancy within the total fire safety system. For example, in a building protected by automatic sprinklers, the consequences of fires that are too small to activate a sprinkler head or are shielded from the water discharge need consideration. Total failure of the sprinkler system also needs to be considered. Thus some degree of smoke and fire compartmentation must be retained, even if a sprinkler system is provided.

3.2.15 Barriers and doors must be designed to resist heavy duty usage expected in a hospital environment. Solid core doors, which may be specified for serviceability reasons, can significantly retard smoke and fire spread (if fitted with suitable smoke seals) for a limited period when closed. They could be used as part of the fire safety strategy to supplement more formalised compartmentation.

3.2.16 The fire and smoke resistance of barriers is often compromised by the omission of protection to services and specific attention must be given to the treatment of such penetrations.

3.2.17 Wall and ceiling linings must be non-combustible. Where carpets or floor coverings are used, consideration must be given to selecting a carpet or floor covering with low flammability, flame spread and smoke production characteristics.  

Note: A pure wool carpet or equivalent may be considered to exhibit low flammability and low flame spread characteristics in the context of floor coverings in buildings complying with the guideline.

3.2.18 The fire hazard properties of materials in the building must comply with Specification C1.10a of the BCA.  

Note: Control of materials is consistent with the Department of Human Services policy of fire prevention.

Manual fire fighting equipment

3.2.19 Manual fire fighting equipment must be considered on a case by case basis, with the final requirements derived by the fire safety engineer in consultation with the building surveyor and the fire authorities, as appropriate.

3.2.20 Fire hydrants must be provided in accordance with Clause E1.3 of the BCA and AS 2419.1. Any variations to these requirements will require consent from the fire brigade.

3.2.21 Fire hose reels must be provided in accordance with Clause E1.4 of the BCA and AS 2441. Any variations to these requirements will require consent from the fire brigade.

3.2.22 Portable fire extinguishers must be provided in accordance with Clause E1.6 of the BCA and AS 2444. They must be appropriately selected and positioned to address the likely types of fire, having regard for potential side effects (for example, powder extinguishers initiating asthma attacks or causing damage to electrical equipment).

3.2.23 Appropriate signage must be provided to all manual fire fighting equipment.

3.2.24 If the patient characteristics are such that misuse of portable extinguishers is likely, then they may be secured or stored in secure locations so that they are readily available in a fire emergency. It may be appropriate to locate extinguishers at staff work stations, in addition to providing them adjacent to specific fire hazards, such as electrical switchboards.

Egress provisions

3.2.25 The BCA Deemed-to-Satisfy provisions for egress must be used for guidance but each
functional area must be considered separately, taking account of the use of the area by occupants from adjacent areas (among other things). Notwithstanding the Deemed-to-Satisfy solutions, the following general principles must be considered:

- Dead ends must be minimised as far as practicable by providing occupants with paths of travel in opposite directions to at least two exits.

- Exits must be distributed as uniformly as practicable within or around the storey served, or in positions which are adequately separated and with easy access.

- The width of the exits must reflect the modes of evacuation and the population using an exit.

- The discharge from the exits must not be obstructed and must generally comply with the requirements of Section D1.10 of the BCA as appropriate.

- Where progressive horizontal evacuation is to be employed, sufficient area must be provided to house the occupants from an adjacent enclosure.

- Where security provisions may affect the ready availability of egress paths, special provisions, such as electric strikes, may be required.

- In some parts of hospitals providing, for example, aged care, paediatric care and the care of the mentally ill, it may be appropriate to consider the provision of secure external areas to act as an open place in order to maintain the safety of the residents and community without unnecessarily compromising fire safety. Such an area must allow occupants to evacuate to a safe distance, having regard for the potential for exposure to radiant and/or connective heat, and smoke and toxic gases.

- It is preferable for patient care and ancillary areas to be separated from the exit routes by construction having appropriate resistance to smoke and fire spread.

- For multi-storey buildings, stairs must be enclosed and consideration given to stair pressurisation having regard (among other things) for the rise in storeys.

**Door operation**

3.2.26 All exit doors and doors in the egress path must be readily openable by a single-handed downward or pushing action on a single device without a key from the side that faces a person exiting the building. Where security measures conflict with these requirements, electric strikes or similar devices must be considered to facilitate an effective evacuation path.

3.2.27 Security provisions must be specifically examined by the fire safety engineer to ensure that fire safety is adequately addressed, while also addressing the safety of the general community, staff and occupants.

**Emergency lighting**

3.2.28 Emergency lighting must be provided in general accordance with Part E of the BCA and AS 2293.1 and in every:

- passageway, corridor, hallway, etc. that is part of the path of travel to a designated exit

- stairway
- room to which patients have access with a floor area of more than 120 square metres.

3.2.29 Emergency lighting must also be provided:

- to a fire control area and/or staff area from which public address announcements are made, patient lists are maintained and the position of the fire can be identified (for example, at a mimic panel)
- where manual call points doors are provided
- any other locations deemed necessary by the fire safety engineer or building surveyor.

**Exit signs**

3.2.30 Illuminated exit signs above doors and exit direction signs to direct staff and patients to exits must be provided so that they are clearly visible to persons approaching an exit from any point in a corridor. The mounting location of the exit signs must take into account their performance in an expected smoky environment.

3.2.31 Exit signs and exit direction signs must be provided in accordance with Part E of the BCA and AS 2293.1.

**Manual call points (MCPs)**

3.2.32 Manual Call Points must be provided so that no point is more than 30 metres from a call point, unless the patient characteristics are such that deliberate false alarms could be raised. In such case, the MCPs must be positioned in each staff area; for example, at a staff work station.

3.2.33 Activation of an MCP must operate the fire alarm and, where appropriate, alert the fire brigade.

**Electrical protection**

3.2.34 Earth leakage current protection employing residual current devices must be installed to all electrical switchboards or general power outlets where appropriate in accordance with relevant Standards and Department of Human Services guidelines.

3.2.35 Electrical services must be installed in accordance with AS 3000.

3.2.36 Consideration must be given to providing protection against, or minimising the risk from, electrical surges.

3.2.37 Inspection of electrical distribution systems must be undertaken by a qualified electrician at a frequency nominated by the fire safety engineer or electrician. Methods such as thermal imaging may be adopted to identify overloaded circuits.

**Appliance safety**

3.2.38 No gas or electric cookers or portable heating appliances are permitted within internal stairways, passageways, corridors, hallways and the like. Where operation of an automatic fire sprinkler system or other automatic fire suppression system may extinguish an appliance flame, the appliance must be fitted with:

- a flame-guard system
or

- a system that will shut off the gas supply and cause lockout when an extinguishing system operates.

3.2.39 Individual heaters, where provided, must be permanently fixed in position and installed in accordance with the manufacturer’s specifications, the relevant Australian Standards and the BCA.

3.2.40 Portable heating appliances, air-conditioning appliances or electric blankets must not be used or stored in hospitals except where alternatives are not practicable; in which case oil filled column heaters may be used. Where necessary, other appropriate means of heating or air-conditioning must be provided.

3.2.41 All heating appliances must be regularly cleaned and maintained.

3.2.42 Electrical, heating and other equipment that is inoperable, appears faulty or otherwise not performing as designed and installed may present a risk of ignition or fire hazard. It must be withdrawn from service until checked and/or repaired by an appropriately qualified person, or replaced.

Ducted heating ventilation and air conditioning systems

3.2.43 Ducted heating/cooling systems can facilitate smoke and fire spread through a building. It is recommended that if the use of ducted heating/cooling systems cannot be avoided, then consideration should be given to offsetting their effects by, as a minimum, the following precautions:

- using ductwork complying with AS 4254—1995; ductwork for air-handling systems in buildings
- fitting combinations of fire/smoke dampers within the ducting at appropriate locations
- adequate fire prevention measures at the heat source; for example, reliable thermal cut-outs
- active smoke control measures
- early suppression of fire by automatic sprinklers
- locating the heat source outside the building.

Smoke control

3.2.44 Where necessary, active smoke control or smoke venting measures must be implemented. There are a number of options which can be considered. These include:

- passive measures (compartmentation)
- zone pressurisation systems
- stair pressurisation systems
- smoke exhaust systems
• natural ventilation.

3.2.45 Account must be taken of the reliability of any proposed systems, in addition to their efficacy.

For example, zone pressurisation systems can be very effective in controlling smoke spread from a sprinkler controlled fire if they operate in accordance with the design requirements of AS 1668.1. They may not be successful, however, in controlling smoke spread from a flashover fire. Also, because of the large number of smoke compartments in hospitals, zone pressurisation systems are complex. Under some circumstances, they can have a reliability below 50 per cent, without extensive test and maintenance programs.

3.2.46 Where active smoke control measures are nominated as part of a fire safety strategy, the following specific requirements must be satisfied:

- The required performance must be stated in quantifiable terms and a test program must be defined by the engineer documenting the system to check for full compliance with the nominated performance levels.

- The actual performance of the system must be measured when the installation is complete and a report submitted to the hospital, documenting the test procedures and comparing the results against the nominated performance levels.

- Any non-compliances must be rectified prior to completion of the works.

- The system must be fully tested to verify ongoing compliance at a frequency not less than that nominated by the fire safety engineer, or one test per year.

3.3 **Existing buildings**

**Automatic fire suppression systems**

3.3.1 The requirements for automatic fire suppression systems in existing hospitals are the same as those for new buildings (refer to 3.2.1 to 3.2.9).

**Construction requirements**

3.3.2 The construction requirements for existing hospital buildings are generally the same as those for new buildings (refer to 3.2.10 to 3.2.10) except as follows:

- Wall and ceiling linings need not be non-combustible unless refurbishment or replacement of existing wall or ceiling linings, or installation of new wall or ceiling linings, occurs.

When carpets are being replaced, thought should be given to selecting a carpet with low flammability and low flame spread characteristics.

*Note: A pure wool carpet or equivalent may be considered to exhibit low flammability and low flame spread characteristics in the context of floor coverings in buildings complying with the guideline.*

3.3.3 All existing wall, floor and ceiling linings must meet the fire hazard properties of materials requirements of Specification C1.10a of the BCA, or be considered as part of the fire risk assessment.
Manual fire fighting equipment

3.3.4 The requirements for manual fire fighting equipment in existing hospitals are generally the same as those for new buildings (refer to 3.2.19 to 3.2.24).

3.3.5 Where variations to the BCA and standards occur regarding existing fire hydrants or fire hose reels, a statement of support from the relevant fire brigade must be obtained.

Egress provisions

3.3.6 The requirements for egress provisions in existing hospitals are the same as those for new buildings (refer to 3.2.25).

Door operation

3.3.7 The requirements for door operation in existing hospitals are the same as those for new buildings (refer to 3.2.26 to 3.2.27).

Emergency lighting

3.3.8 The requirements for emergency lighting in existing hospitals are the same as those for new buildings (refer to 3.2.28 to 3.2.29).

Exit signs

3.3.9 The requirements for exit signs in existing hospitals are the same as those for new buildings (refer to 3.2.30 to 3.2.31).

Manual call points (MCPs)

3.3.10 The requirements for manual call points in existing hospitals are the same as those for new buildings (refer to 3.2.32 to 3.2.33).

Electrical protection

3.3.11 Earth leakage current protection employing residual current devices must be installed to all electrical switchboards or general power outlets where appropriate in accordance with relevant Standards and Department of Human Services guidelines.

3.3.12 The status of existing electrical distribution systems must be checked by a qualified electrician and reports must be retained by the facility. The inspection must be undertaken at a frequency nominated by the fire safety engineer or electrician. Methods such as thermal imaging may be adopted to identify overloaded circuits. Rectification works identified by the electrician must be undertaken as soon as practicable.

3.3.13 New electrical services must be installed in accordance with AS 3000.

3.3.14 Consideration must be given to providing protection against, or minimising the risk from, electrical surges.

Appliance safety

3.3.15 The requirements for appliance safety in existing hospitals are the same as those for new buildings (refer to 3.2.38 to 3.2.42).
Ducted heating ventilation and air-conditioning systems

3.3.16 The requirements for ducted heating in existing hospitals are the same as those for new buildings (refer to 3.2.43).

Smoke control

3.3.17 The smoke control requirements for existing hospitals are the same as those for new buildings (refer to 3.2.44 to 3.2.46).
4 Other measures

4.1.1 The fire safety measures described in this section are applicable to both new and existing buildings.

**Fire Prevention and Fire Safety Management**

4.1.2 The Department of Human Services policy of smoke free workplaces must be enforced.

4.1.3 Where a patient exhibits potential fire risk behaviours, the management must conduct an appropriate assessment and implement strategies to address the risk.

4.1.4 All newly purchased upholstered furnishings, mattresses, curtains, etc. must be flame-retardant or treated with flame-retardants to minimise the risk of ignition. In areas accommodating the mentally ill, intellectually disabled or other patients likely to cause injury to themselves or others, it is recommended that the foam fillings of mattresses and other furnishings be treated with flame retardants to minimise the risk of ignition if any protective coverings are removed.

4.1.5 Subject to availability, it is recommended that fillings and covering materials for furnishings must be tested in accordance with AS 3744.1 (smouldering cigarette) and AS 3744.2 (small flaming) ignition sources. Individual materials or composites must not have exhibited any of the nominated criteria in the Standards for ignition.

4.1.6 Preference must be given to flame retardant materials which maintain their effectiveness without the need for re-application. However, some materials such as curtains may require special washing methods or re-application of retardants after washing.

4.1.7 It must, however, be recognised that the use of flame retardants interferes with the combustion processes and as a side effect may increase the concentration of smoke (soot) and toxic gases produced. However, the reduction of the number of fire starts and of the number of larger fires resulting from the use of flame retardants will usually justify the selection of this strategy.

**Fire Emergency Procedures and Training**

4.1.8 Emergency procedures must be documented and reviewed at least annually in accordance with appropriate Standards and the Department of Human Services Framework document.

4.1.9 Procedures covering fire and other building emergencies must be prepared and documented for each building or unit on a site. The procedures must include separate sections covering actions in the event of activation of a smoke or heat detector, discovery of a fire/smoke incident or suspect conditions by staff; evacuation procedures; fire notices; and emergency plans. The procedures must be developed and documented specifically for the staff at each facility, patient characteristics, staffing levels, fire protection systems, facility layout, etc.

4.1.10 Procedures must be prepared and reviewed according to the requirements of the Department of Human Services Framework and meet the requirements of AS 3745 and AS 4083. The procedures must be consistent with the fire safety strategy for the site.

4.1.11 A site-specific training program must be developed for each site in accordance with the Department of Human Services Framework document. The training program must be
competency based and the competency of staff must be determined as part of the training program.

4.1.12 All staff in a hospital must be assessed according to the requirements of the Department of Human Services Framework document at intervals not exceeding 12 months. Staff must receive further training if competency levels are not met.

4.1.13 *Exercises* and *fire drills* are to be conducted with sufficient frequency so that staff on all rosters become familiar with the procedures.

4.1.14 Reference must be made to the Fire and Emergency Response Procedures and Training Framework for further information.

**Fire Orders and Evacuation Plans**

4.1.15 Building or site-specific fire orders suitable for each building must be developed, along with evacuation plans showing MCPs, fire extinguishers, egress routes and assembly points as appropriate, and must be displayed in prominent locations.

**Occupant capability**

4.1.16 The occupants’ capabilities may vary from one functional area to the next in a major hospital complex.

4.1.17 Occupant capabilities must be established on a functional area or ward basis. Different fire risk management strategies may therefore be identified for different areas of a hospital. For example, a strategy based on the Department of Human Services *Capital Development Guideline 7.5: Fire Risk Management in Congregate Care Facilities* may be appropriate for a psychiatric ward.

4.1.18 An indication of the abilities of patients, staff and visitors to evacuate can be determined from factors such as evacuation drills and assessments made by staff, in addition to judgement applied by the fire safety engineer. Consideration of the patients’ abilities to evacuate must include scenarios when staff/patient ratios are at a minimum, patients are not awake or are being treated and circumstances are difficult.

4.1.19 Management processes must be established to identify significant changes to occupant capabilities and ensure the fire safety strategy is reviewed accordingly.

**Associated life safety issues**

4.1.20 Appropriate measures must be taken to minimise the risk to occupants associated with adopting the nominated fire safety measures.

4.1.21 For example, if patients are likely to be prone to inflicting self harm, care must be taken in the selection and installation of fire protection equipment to reduce, as far as reasonably practicable, opportunities for self-harm.

**Protection against external environmental hazards**

4.1.22 If hospitals are located in bushfire prone areas or in a wildfire management overlay in any planning scheme, the requirements of the BCA Volume 1 and Guideline 7.2 (for a bushfire safety risk assessment) must be complied with for all buildings, whether existing or new.

4.1.23 If hospitals are located in alpine areas (as defined in the building regulations and the BCA),
the requirements of the BCA Volume 1 must be complied with for all buildings, whether existing or new.