

8. FIRE SERVICES

Introduction

8.1.00 INTRODUCTION

Fire systems are systems installed in buildings to detect or protect the building and occupants from smoke or fire.

Fire detection is the process of detecting fire or smoke in buildings using:

- Smoke and thermal detectors
- Manual call points.

Fire protection of buildings relates to the active process of protecting the building (fire fighting) by use of:

- Fire hose reels
- Fire hydrants
- Sprinkler systems
- Gaseous fire quenching systems
- Fire extinguishers.

In conjunction with the detection or protection systems, other services are utilised to assist occupants in the safe evacuation of buildings, being

- EWIS warning systems
- Smoke management systems
- Emergency lighting systems.

Provision of fire protection services in hospitals is defined by current regulations and codes to give an appropriate level of protection to patients, personnel and buildings

Installations are to always be designed to the minimum required to meet the regulations. Smoke detection systems are to be installed in all patient care buildings.

8.1.05 CODES AND STANDARDS

Fire services are to be designed to the following codes and standards:

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| BCA | Building Code of Australia |
| AS 1670 | Fire detection, warning and intercom systems, |
| AS 4428 | Fire detection, warning, control and intercom systems – Control and indicating equipment |
| AS 1603 | Automatic fire detection and alarm systems |
| AS/NZS 1221 | Fire hose reels |
| AS 2419 | Fire hydrant installations |
| AS 2118 | Automatic fire sprinkler systems |
| AS 4214 | Gaseous fire extinguishing systems |
| AS 1851 | Maintenance of Fire protection equipment |
| AS/NZS 1841 | Portable Fire extinguishers |
| AS/NZS 2293 | Emergency evacuation lighting for buildings |
| AS 1668.3 | Smoke control systems for large single compartments or smoke reservoirs |
| AS/NZS 1668.1 | The use of mechanical ventilation and air-conditioning in buildings-Fire and smoke control in multi-compartment buildings |
| AS/NZS 3000 | Electrical Installations |

Note: Some smoke management relevant sections of the BCA are strongly linked to HVAC services. Consequently relevant issues are discussed in the Mechanical Section.

8.1.10 COST EFFECTIVENESS

There is scope for more cost effective fire protection of health care buildings. In particular:

1. The BCA requirements for EWIS in a hospital should be rationalised and standardised. The part that the EWIS plays in the emergency plan should be explained. The role of floor wardens and head wardens in a conventional building do not apply. In particular the facilities to be provided at a staff station should be clearly stated. Perhaps a WIP and a break glass unit would suffice.
2. The treatment of patient care areas in terms of speakers and audible alarms should be spelt out.
 - The design of the sprinkler system should not preclude the use of innovative technologies such as:
 - Extended coverage sprinklers,
 - Residential sprinklers,
4. Areas ancillary to patient care should be defined in terms of the nearest BCA and AS 2118 categories. Large areas of the hospital, particularly administration, may be suitable for the installation of light hazard sprinklers. Capital and Life cycle costing techniques to be used to determine the feasibility of using sprinkler systems.

Planning

8.2.00 GENERAL

The best means of reducing capital and recurrent costs for fire services is in careful planning of buildings to minimise or avoid the need for fire protection, especially sprinklers.

Fire Safety Engineering (FSE) allows a holistic approach that can provide benefits in terms of cost effectiveness and increased functionality. A building less than 25m in height does not require sprinklers but the provision of sprinklers may enable some other modification to the building that is desirable.

Where specific facility-related fire risks are not covered adequately in the BCA and other relevant regulations, the risk shall be analysed and a suitable engineering solution shall be developed and implemented to maintain an acceptable risk level. The need for additional measures for a specific facility and the suitable solution shall be established during the design process.

Consideration should be given to undertaking FSE analysis of all significant health care buildings.

Health buildings shall be planned to minimise or avoid the need for sprinkler systems.

8.2.05 SPRINKLER DESIGN

Where installed, sprinkler pipe systems shall be determined by the full hydraulic calculation method.

The need for fire sprinklers for a specific facility and the suitable solution shall be established during the design process by a Certified Fire Engineer.