

**SECTION 8: FIRE PROTECTION AND DETECTION SERVICES
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8.1 INTRODUCTION

This section of the Design Standards provides details of the University's minimum requirements for fire protection and detection. The consultant team is required to produce their own project specification which incorporates this section and other sections of the Design Standards as well as all relevant legislation, regulations and codes.

The consultant shall consult with the Local Fire Brigade and the University's Contracts Manager (Business Services) at the earliest possible stage in the design process so that both the local fire brigade and the University's requirements are fully satisfied.

All project documentation is required to be submitted for approval prior to tendering.

8.2 STANDARDS AND DESIGN CRITERIA

The design and installation is to meet the latest requirements of all national, state and local authorities including but not limited to the following:

- National Construction Code of Australia (NCC);
- AS 2118.1 Automatic Fire Sprinkler Systems;
- AS 2118.4 Automatic Fire Sprinkler Systems – Residential;
- AS 1670.1 Fire Detection, warning, control and intercom systems – system design, installation and commissioning – Fire;
- AS 1670.4 Fire Detection, warning, control and intercom systems – system design, installation and commissioning – Sound systems for emergency purposes;
- AS 1603 Series of Standard for Fire Alarm Equipment;
- AS1668.1 & 3 Use of Smoke Control in Buildings;
- AS 2441 Installation of Fire Hose Reels;
- AS 1850 Portable Fire Extinguishers;
- AS 2444 Portable Fire Extinguishers and Fire Blankets – Selection and Location;
- AS 3500 National Plumbing and Drainage Code;
- AS 2419 Fire Hydrant Installation System Design, Installation and Commissioning;
- AS ISO 14520 Gaseous Fire-Extinguishing Systems – Physical Properties and System Design;
- HB 233-2008: Fire Protection Systems Testing – Water Conservation Handbook;
- Plumbing Industry Commission of Victoria;
- Local Fire Brigade;
- Local Municipal Council;
- Water supply authority requirements;
- ACMA Regulations;
- Manufacturer's guidelines.

The consultant team is, at the earliest possible time, to consider in their design the provision of safe and easy access for the maintenance of all equipment.

Where existing buildings are undergoing staged refurbishment, the consultant shall consult with the relevant building surveyor and the University's Project Manager on the requirements for refurbishment works compliance.

Where the deemed to satisfy requirements of the NCC cannot be met, the consultant and relevant building surveyor shall consult with the University and Local Fire Brigade to achieve an alternate solution.

Fire protection systems shall generally utilise town mains pressure or, at the Parkville campus the campus fire ring main. Fire pump sets shall be installed where town's main water pressure does not provide adequate pressure for firefighting requirements.

This Section of the Design Standards does not cover Emergency Lighting, refer to Section 7, Electrical Services.

8.3 FIRE PROTECTION AND DETECTION SYSTEMS

8.3.1 Fire Protection Systems

Where fire protection systems are required by NCC or the University, these systems shall include the following:

- Wet pipe sprinkler system;
- Wall wetting sprinkler protection;
- Pre-action sprinkler systems;
- Gaseous suppression systems for communications and data rooms/suites;
- An appropriate automatic fire extinguishing flood system will be required for gas and cylinder storage areas.
- Fire hydrant system;
- Fire hose reel system;
- Portable fire extinguishers and fire blankets;
- Flow and pressure testing of existing system prior to design;
- Upgrade of hydrant hose couplings to local brigade requirements;
- Removal of fire hoses from existing buildings as part of refurbishment work (*Note: This will require a Building Permit to be issued by a Registered Building Surveyor*);
- Refurbishment projects shall be fully documented for all floors. When a partial floor level is being refurbished, the total floor area shall be documented and the fire protection systems upgraded as required.
- Padlocks will be Lockwood type 225/40/119 fire red keyed to suit CL 003 keys.

The University prefers to avoid the use of fire curtains. Any consideration of fire curtains must be discussed with the University's Contracts Manager at the earliest possible time.

8.3.2 Fire Detection Systems

The fire detection systems to be considered where a fire alarm system is required by NCC or the University shall include the following:

- An addressable point type smoke detection system;
- An aspirating smoke detection system connected to the addressable FIP;
- Connection of the FIP to the Emergency Warning and Intercom System (EWIS);
- Break glass alarms connected to the FIP;
- Networking of FIP's in University buildings and campuses;
- Provision of Mimic Panels for local information and alerts/control;

- Provision of graphic display monitors for individual University buildings and/or campus wide as requested by the University;
- Updating existing graphic display monitors where existing systems are upgraded/expanded;
- Provision smoke control system detector;
- Linking with magnetic door holders;
- The consultant shall document the use of AMPAC Fire Finder Plus Analogue Addressable Fire Indicator Panels in new buildings, renovations and building upgrade works;
- Where existing FIP's installed in existing buildings are to be fully or partially refurbished the designer shall document, for record purposes the entire fire detection system including existing system elements and those affected by the refurbishment works;
- Each addressable loop circuit shall not exceed 80% of the design capacity recommended by the manufacturer;
- A circuit isolator shall be fitted to each floor or between a maximum of 40 devices;
- Provision of both electronic and hard copies of certificates, commissioning documents and drawings. Where works involve partial upgrades to existing systems the University requires the contractor/designer to provide this information for the entire system.

The Parkville Campus, excluding the buildings below, is served by an "AMPAC Fire Finder" addressable series of fire indicating panels. The main FIP is fitted with Dual Wireless Alarm Signalling Equipment (ASE) which is monitored by ADT/Tyco. The Campus is divided and wired with four cable loops. All building FIP, main monitored valves/pressure switches and or DBA's are connected via addressable input devices and wired with four cable loops. These input devices are programmed into the main FIP via five zones on the ASE (3 for FIP's and 2 for sprinklers).

The FIP is to be fitted and programmed with a graphic package which will be remotely monitored in the security office (Grattan St) and at Campus Management (Bedford St). All new sub FIP's will be AMPAC Fire Finder Plus type panel and the building is to be fitted with addressable type detectors.

All locks cylinders shall be keyed to CL 003 locks.

Parkville buildings fitted with their own ASE are:

Building 158 Sydney Myer Asia Centre

Building 199 Arts Centre

All other buildings external to the main Parkville campus have their own ASE, the University's Project Manager shall advise on a case by case basis.

8.3.3 Sound Systems for Intercom Systems for Emergency Purposes

- The consultant shall document an emergency warning and intercom system compliant with the requirements of the NCC, the University and AS1670.4;
- The consultant shall investigate the possibility of integrating emergency warning with the public-address sound system depending on the building configuration and University public address requirements;

- The consultant shall document the use of an AMPAC EVAC U Elite Occupant Warning and Intercom System in new buildings and where a building is being refurbished;
- The consultant shall consider the following when designing the Emergency Warning Intercom System:
 - The system shall be capable of integration into the University's existing site wide system;
 - The sound system shall incorporate voice announcements;
 - Warden Intercom Points;
 - Induction loops and visual warning devices for hearing impaired people.

8.3.4 EWIS and Building Occupancy Warning System Requirements

AMPAC EVAC U Elite, is the Early Warning Intercom System approved by the University.

The EWIS shall be interfaced to the fire indicator panel and shall activate on receipt of an alarm from the FIP or a break glass alarm (BGA).

The EWIS shall be installed to act as a standard PA system. Early discussion with the University Project Manager is required to establish zones, etc.

The EWIS shall be positioned adjacent to, or directly in the line of sight of, the building fire panel.

When a building occupancy warning system is required instead of an EWIS it shall be an AMPAC EvacU Grade 2&3 EWCIE.

All lock cylinders shall be keyed to CL 003 locks.

8.3.5 Portable Hand Held Extinguishers

The consultant shall document the location and type of portable handheld fire extinguishers as required by the NCC, the University, AS 2444 and AS1850.

Public access area extinguishers are to be housed in lockable break glass cabinets.

Special consideration shall be given to laboratories, data suites and switch rooms and Communication rooms. The consultant is to consult with the University's Project Manager and the Contracts Manager (Business Services) prior to documenting the intended type of extinguisher/s.

Refer to Section 2: Occupational Health and Safety, for the University's minimum requirements on the selection, location and number of portable fire extinguishers.

8.3.6 Fire Hoses

The minimum requirements for fire hoses are set out in the relevant Australian Standard. The project specification shall require fire hoses to carry a two-year warranty against defective material or faulty workmanship.

The consultant is to note that in University buildings the following arrangements have been agreed with the local fire brigade:

- that all external hydrants need not be fitted with a fire hose, and that where this hydrant is enclosed in a cabinet, the appropriate sign will be displayed;
- that where an approved hose reel has been installed in a building, the ground floor hydrant points need not be equipped with a fire hose;
- that where hydrants are to be equipped with a fire hose, then 30 metres of 38mm hose with a branch and 12mm nozzle will be installed;

- that within a building where hydrants and hose reels are provided in accordance with regulations, that the requirement to have a 9-litre stored pressure water fire extinguisher installed per 200 square metres will not be mandatory. The consultant is to discuss this provision with the University's Contracts Manager

Detailed hose requirements are as follows:

- Size: 30 metre length x 38mm diameter
- Class M: Working Pressure 1400 kPa Min
- Burst Pressure: 3500 kPa Min
- Construction: Synthetic woven jacket
- Lining: Latex Rubber, or equal and approved equivalent.
- Coupling: Supply with MFB-approved coupling.

8.3.7 Sealing Penetrations

All penetrations through fire rated walls, floors and ceilings must comply and be certified to the following:

- AS 1530.4 Fire Tests on building materials, components and structures
- AS 4072.1 Components for the fire protection of openings in fire resistant separating elements

8.3.8 Fire Protection Services Deployment

The following table outlines the University's baseline requirements regarding the deployment of Fire Protection Services. The consultant is required to agree to the intended Fire Protection Services with the University's Contracts Manager prior to commencing the project design.

Requirement	Category 1	Category 2	Category 3	Category 4
Fire Protection				
Pre-action Sprinklers	Yes			
Gaseous Suppression Systems	Yes			
Sprinkler System		Yes	Yes	
Fire Hydrants	Yes	Yes	Yes	
Fire Hose Reels	Yes	Yes	Yes	
Portable Fire Extinguishers	Yes	Yes	Yes	Yes
Fire Detection				
Aspirating Smoke Detection System	Yes			
Addressable Fire Detection System		Yes	Yes	
Emergency Warning Systems				

EWIS	Yes	Yes	Yes	
Occupancy Warning System			Yes	

The above referenced building categories are defined as follows:

- Category 1 – Critical Facilities:
Data centres, archive stores etc.
- Category 2 – Important Facilities:
Major research facilities, animal houses, libraries, large residential accommodation.
- Category 3 – Standard Facilities:
Minor research facilities, teaching facilities, office accommodation, sporting facilities.
- Category 4 – Minor Facilities:
Storage facilities, sheds, glass houses etc.

8.4 DOCUMENTS TO BE PROVIDED

In addition to the normal as-built drawings and specifications, manuals, warranties and certifications required to be provided to the building owner at practical completion, the following requirements are specifically drawn to the consultant's and contractor's attention:

- Independent commissioning documentation
- Fire matrix (all items connected to the FIP to be on one matrix)
- Fire penetration certificates
- Hydrant and sprinkler block plans
- A3 laminated set of fire detector drawings
- Fire Engineering Reports
- A schedule of warranties and guarantees
- Name and contact details of suppliers, installers and local service agent for all equipment

Refer to the University's CAD Standards for further information.

Draft documents are to be provided four weeks prior to practical completion and final documents are to be provided no more than four weeks after practical completion.

8.5 INDEPENDENT COMMISSIONING AGENT

The contractor is required to appoint an independent commissioning agent to inspect and confirm compliance of the fire systems with the University's Design Standards and all relevant Australian Standards.

The commissioning agent's appointment will be subject to approval by the University's Contracts Manager.

8.6 DESIGN CHANGE AUTHORISATION

All requests of changes to the requirements of the Design Standards must be made on the Modification Request Form. No design work is to proceed on the basis of the proposed modification until the modification request has been approved in writing.

A copy of all signed design change request forms together with schedule of all approved changes are required to be submitted as part of the project handover documentation.

8.7 DEFECTS LIABILITY PERIOD

The design consultant MUST include in the project documentation a requirement that as part of the contract, the fire services contractor is to provide a full maintenance programme (regulatory, programmed, breakdown etc) during the 12 months defects liability period. During the defects liability period the contractor must provide monthly reports, work dockets etc to the University's Contracts Manager.