SCENTRE GROUP

GENERAL SPECIFICATION

FIRE SERVICES

DOCUMENT INFORMATION

Document No.	Version No.	Date of this issue
GS-FS	07	22/09/15

PREFACE

This General Specification is intended as supplementary information to be read in conjunction with the Project Specification issued in the Contract Documents.

The Scope of Works relevant to the Contract is contained within the Project Specification(s) and this specification provides additional information as to requirements pertaining to that scope.

Items may be referenced within that are not within the Scope of Works.

CONTENTS

1 GENERAL REQUIREMENTS

1.1 GENERAL

This General Specification covers the general requirements of materials, workmanship, testing, maintenance and documentation for fire protection installations. Unless specified otherwise in other project specific document, these requirements are applicable when they are relevant to the project.

If a service is not detailed in the project specification this general specification is to be used when adding services to the project as the minimum standard for that service and as a basis for costing by the contractor.

1.2 STANDARDS

General:

a) Comply with the relevant Australian Standards including but not limiting to those referenced in this document.

b) If the Australian Standard referenced in this document is superseded or withdrawn, the superseding standard or other relevant standards shall apply.

c) Refer to the latest issue of the Australian Standard unless a particular issue is referenced in the BCA.

1.3 DESIGN

Electrical supply system: 230/400 V a.c., +10% -6%, 50 Hz.

Electromagnetic compatibility (EMC) limits: Electrical equipment and wiring shall comply with AS 61000.3.

Fault level protection: To withstand the fault level of the incoming supply at the location of the equipment.

Services and equipment: Locate and arrange all services and equipment so that:

a) Failure of plant and equipment (including leaks) does not create a hazard for the building occupants.

b) Failure of plant and equipment (including leaks) causes minimum or no damage to the building, its finishes and contents.

c) Fan coil units, valves or other potential leak sources are not located over rooms containing water sensitive equipment or finishes.

d) Inspection and maintenance operations can be carried out with minimum inconvenience and disruption to building occupants or damage to the building structure or finishes.

e) Safe tray and an overflow pipe are provided to each tank, hot water heater and storage vessel.

f) Services and equipment are readily accessible for inspection and maintenance and arranged so that inspection and maintenance can be carried out in a safe and efficient manner.

   I. If parts of the plant require regular inspection and maintenance either locate plant so it is safely and readily accessible from floor level or provide permanent access platforms and ladders.

   II. Locate items of equipment that require inspection and maintenance above removable ceiling where possible. If this is not possible (for example above set plaster or other inaccessible ceilings) provide access panels. Arrange services and plant locations to reduce the number of access panels. Coordinate with other trades to use common access panels where feasible.

   III. Modify manufacturer's standard equipment when necessary to provide the plant access.

g) Submission to authorities: If required, submit design and documentation to statutory authorities for approval. Provide evidence showing approval of the authorities.

1.4 MATERIALS AND WORKMANSHIP

a) Materials: Provide new and high quality materials and components.

b) Workmanship: The standard of workmanship for all works shall conform to the industry best practice and shall be in accordance with the relevant standards, codes of practice.

c) Consistency: For the whole quantity of each material or product, use the same manufacturer or source and provide consistent type, size, quality and appearance.

d) Factory finish: To manufacturer's standard for factory fabricated equipment. Any damage shall be repaired at completion.

e) Locking system: Provide 'Lockwood Twin System' (including 003 for Fire Brigade Access) for all locking applications.

f) Samples: Submit samples for review, including but not limited to:

   I. Sprinklers.

   II. Piping supports.

   III. Flexible tube assembly dropper.

   IV. Smoke detectors and thermal detectors.

   V. Loudspeakers.

   VI. Strobe.

   VII. WIP

1.5 INSTALLATION

a) General: Install equipment and services plumb, fix securely and organise reticulation neatly. Provide for movement in both structure and services.

b) Arrangement: Arrange services so that services running together are parallel with each other and with adjacent building elements. Under suspended ground floors, keep services at least 150 mm clear above ground surface, additional to insulation, and ensure access is not impeded.

c) Lifting: Provide permanent fixtures attached to the equipment, for lifting heavy items of equipment, as recommended by the manufacturer.

d) System integration: Interconnect system elements so that the installation performs their designed functions.

e) Fixing:

   I. General: If equipment or services are not suitable for fixing to non-structural building elements, fix directly to structure and trim around holes or penetrations in non-structural building elements.

   II. Fasteners: Use proprietary fasteners capable of transmitting the loads imposed, and sufficient to ensure the rigidity of the assembly.

   III. Explosive-powered tools: Do not use explosive-powered tool

f) Cleaning: At Completion, clean all pipework, ductwork, equipment and switchboards (internal and external); remove all redundant material and rubbish from site.

1.6 BUILDING PENETRATIONS

a) General: Provide all necessary building penetrations other than those formed in situ in concrete and block work structures. Seal all penetrations after installation of services.

b) Piping sleeves

I. General: Provide metal sleeves formed from pipe sections for piping penetrations through building elements.

II. Sleeve diameter: Sufficient to provide an annular space around the pipe or pipe insulation of at least 12 mm.

III. Minimum sleeve thickness:

i. Metal: 1 mm.

ii. PVC: 3 mm.

IV. Sleeve terminations:

i. If cover plates are fitted: Flush with the building surface.

ii. If floor draining to floor waste: 50 mm above finished floor.

iii. In fire-rated and acoustic-rated building elements: 50 mm beyond finished building surface.

iv. Elsewhere: 5 mm beyond finished building surface.

V. Finish: Prime paint ferrous surfaces.

c) Cable sleeves: Provide UPVC sleeves formed from pipe sections, for penetration through ground floor slab and beams and external walls by cables not enclosed in conduit. Provide sleeves for MIMS cables penetrating through masonry.

d) Penetrations

I. Fire Resistance Level: Seal penetrations using a system to AS 4072.1 to retain the design FRL of the building element.

II. Non-fire rated building elements: Seal penetrations around conduits and sleeves. Seal around cables within sleeves. If the building element is acoustic rated, maintain the rating.

III. Roof penetration: Provide leak-proof seal for roof penetration with under-flashing and over-flashing.

IV. Limitations: Do not penetrate or fix to the following without approval:

i. Structural building elements including external walls, fire walls, floor slabs and beams.

ii. Membrane elements including damp-proof course, waterproofing membranes and roof coverings.

V. Membranes: If approval is given to penetrate membranes, provide waterproof seal between the membrane and the penetrating component.

1.7 VIBRATION SUPPRESSION

a) General: Minimise the transmission of vibration and noise from rotating or reciprocating equipment to other building elements.

b) Equipment requiring vibration isolation mountings: Except for external equipment that is not connected to the structure of any building, support rotating or reciprocating equipment on mountings as follows:

I. For static deflections < 15 mm: Single or double deflection neoprene in-shear mountings incorporating steel top and base plates and a tapped hole for bolting to equipment.

II. For static deflections ≥ 15 mm: Spring mountings.

c) Selection of vibration isolation mountings: Select mountings to achieve 95% isolation efficiency at the normal operating speeds of the equipment.

d) Spring mountings: Use freestanding laterally stable springs with at least 12 mm clearance between springs and other members such as bolts and housing. Provide the following:

   I. Ratio of mean coil diameter to compressed length at the designated minimum static deflection: > 0.8:1

   II. Minimum travel to solid of at lease 150% of the designated minimum static defection.

   III. Levelling bolts and lock nuts.

   IV. 5 mm neoprene acoustic isolation pads between base plate and support.

   V. Vertical resilient limit stops: To prevent spring extension when unloaded, to serve as blocking during erection, and which remain out of contact during normal operation.

   VI. Snubbing: Snub the springs to prevent bounce at start-up.

e) Installation: Set and adjust vibration isolation mounting supports to give adequate clearance for free movement of the supports.

f) Inertia bases:

   I. General: Use inertia bases with mass at least that of the equipment supported.

   II. Construction: Steel-framed reinforced concrete.

1.8 NOISE CONTROL

a) General: Control noise levels at site boundaries and in occupied spaces by proper system design, equipment selection, and acoustic treatment to plant rooms and noise sources.

b) Environmental noise:

   I. General: Comply with the noise limit requirements of the authorities.

   II. Background noise: If there is no specific authorities' noise limit requirements, classify the site as noise area category R3 in accordance with AS 1055.

   III. Noise level at boundary: If there is no specific authorities' noise limit requirements, ensure that when equipment operates under normal conditions it will not raise the ambient noise level at the

   IV. Nearest boundary of the site by more than 5 dB when measured on the unweighted 'A' scale, and will be free of any disturbing tone or harmonic sound, at any time of day and night, 7 days a week.

   V. Building interior noise: Ensure that the sound levels of different areas of the building interior will not exceed the recommended 'satisfactory' levels in accordance with AS 2107, when all equipment are operating under normal conditions.

1.9 SEISMIC RESTRAINT

a) General: Arrange all components, other than service items exempted in AS 1170.4, to resist seismic loads determined in accordance with AS 1170.4. Securely fix all plant and equipment to the building structure. Do not rely on gravity and/or friction to resist seismic forces.

b) Anti-vibration mounts: Use horizontally restrained type.

c) Components: Do not use components that will be damaged by earthquake conditions. Protect systems against the adverse effects of components such as mercury switches that, although not damaged by earthquake, may malfunction.

1.10 METAL WORK

a) General: Use metalwork capable of transmitting the loads imposed, and sufficient to ensure the rigidity of the assembly without causing deflection or distortion of finished surfaces. Construct to prevent rattle and resonance.

b) Fabrication: Keep clean, neat and free from burrs and indentation. Remove sharp edges.

1.11 WELDING AND BRAZING

a) Hot work permit: Apply hot work permit procedures for all welding, brazing, grinding or other operations including open flames or producing heat and or sparks.

b) Welding:

   I. Steel: To AS 1554.1.

   II. Aluminium: To AS 1665.

   III. Stainless steel: Follow the recommendations of WTIA Technical Note 16.

c) Brazing: Ensure brazed joints have sufficient lap to provide a mechanically sound joint.

d) Filler metal:

   I. General: To AS 1167.1.

   II. Copper-to-copper, copper-to-brass, brass to brass: Minimum 1.8% silver content and maximum 0.05% cadmium.

e) Application: Ensure the brazing alloy wets all surfaces and fills the clearance between the overlapping parts

1.12 SITE PAINTING

a) General: Paint new surfaces and equipment including in plant rooms, except chromium, anodised aluminium, UPVC, stainless steel, non-metallic flexible materials and normally lubricated machine surfaces.

   I. Exposed to view: 1 prime coat and 2 full gloss enamel finish coats.

   II. Uninsulated ferrous pipes in concealed space: 1 prime coat.

   III. Factory painted items: Repair damaged paint.

b) Low VOC emitting paints: Provide the following low odor/low environmental impact paint types with the following VOC limits:

   I. Primers and undercoats: < 5 g/litre.

   II. Low gloss white or light coloured latex paints: < 5 g/litre.

   III. Coloured low gloss latex paints: < 16 g/litre.

   IV. Gloss latex paints: < 90 g/litre.

c) Paint application: Apply first coat immediately after substrate preparation and before contamination of the substrate can occur. Ensure each coat of paint or clear finish is uniform in colour, gloss, thickness and texture, and free of runs, sags, blisters or other discontinuities.

d) Repair galvanising: If galvanised surfaces have been cut or welded after galvanising, prime the affected area using zinc rich organic binder.

e) Colour schedule: Follow the colour schedule below unless otherwise documented.

Service	Colour
Fire Fighting	Signal Red, R13
Electrical	Orange, X15

1.13 MARKING

1.13.1 GENERAL

a) General: Mark services and equipment to provide a ready means of identification.

b) Piping: Identify throughout its length, including in concealed space.

c) Electrical:

   I. Mark operable control devices, indicators, isolating switches to provide a ready means of identification.

   II. Label to indicate the origin and destination of the cable.

d) Consistency: Label and mark equipment using a consistent scheme across all services elements of the project.

e) Text: Provide marking and labelling text identical to the text and terminology used in operating and maintenance manuals.

1.13.2 LABELS

a) Type: Select from the following:

   I. For indoor application: Engraved two-colour laminated plastic.

   II. For outdoor application: Engraved two-colour laminated plastic, UV and fade resistant" and "to be screw fixed".

b) Colours: Generally black lettering on white background except as follows:

   I. Danger, warning labels: White lettering on red background.

   II. Main switch and caution labels: Red lettering on white background.

c) Minimum lettering heights: Unless specified in the Australian Standard:

   I. Equipment nameplates: 40 mm.

   II. Warning notices: 7 mm.

   III. Automatic controls and electrical equipment: 5 mm.

   IV. Isolating switches: 5 mm.

   V. Inside electrical enclosures: 3.5 mm.

   VI. Other: 3 mm.

   VII. Location signage for doors: 50mm.

d) Location: Locate labels so that they are easily seen and are either attached to, below or next to the item being marked.

e) Fixing:

   I. General: Use mechanical fixing.

   ll. Valves and pumps: Attach by key ring to valve hand wheels.

1.14 SUBMISSION BY CONTRACTOR

1.14.1 TECHNICAL DATA

a) General: Carry out system design. Submit system design details and technical data for all items of plant and equipment selected before ordering equipment.

b) Data to be submitted: Include at least the following:

   I. System design:

i. Assumptions and design parameters.

ii. Engineering Calculations - The calculations should be via relevant software (such as HYENA calculations accompanied by drawings illustrating node points or manual hydraulic calculation sheets accompanied by drawings.

II. Schedules of equipment selected with the following information::

i. Model name, designation and number.

ii. Capacity of all system elements.

iii. Country of origin and manufacture.

iv. Materials used in the construction.

v. Size, including required clearances for installation.

III. Manufacturers' technical literature, type test report.

1.14.2 SHOP DRAWINGS

a) General: Prepare and submit shop drawings of fabrication and installation of services and equipment. Shop drawings shall be dimensioned, with reference to building structure and other services. Shop drawing shall contain all necessary information for coordination and construction on site, including symbols and legends, details, sections, and equipment schedules.

b) Shop drawings: Prepare and submit the following shop drawings:

I. Drawings of work to be provided by the Builder including:

i. Equipment rooms and platforms.

ii. Shafts and risers.

iii. Access doors and panels.

iv. Loads to be imposed on the structure during installation and operation.

v. In situ penetrations and openings.

vi. Structural support for equipment.

vii. Fire resistance of building structures.

viii. Other Builder's works documented.

II. Drawings of work by other contractors.

III. Fire protection services drawings including:

i. Layouts of sprinkler, pipework and equipment (smoke detectors, loudspeakers, WIP, warning sign, and others).

ii. Riser layouts and sections.

iii. Pump room, valve room and fire control room layouts.

iv. Seismic restraint details.

v. Piping schematic drawings.

vi. Cable route and wiring diagrams.

vii. Relevant performance data for each item of equipment including make, model, speed, capacity etc., as appropriate.

viii. Fire alarm schematic drawings

ix. Mechanical interface matrix

1.14.3 WORK-AS-EXECUTED DRAWINGS

a) General: Submit work-as-executed drawings. Prepare work-as-executed drawings based on the shop drawings and include changes made during the construction and commissioning periods.

b) Submit for review: Submit draft work-as-executed drawings for review.

c) Final submission:

   I. Timing: Submit work-as-executed drawings prior to Completion.

   II. Format: Submit work-as-executed drawing in:

      i. Revit format; and

      ii. Adobe .pdf files

1.14.4 DATA FORMAT

a) General: Shop drawings and work-as-executed drawings must be prepared using Revit format. Data in other compatible formats may be considered, but will only be accepted with prior agreement by the Project Manager

b) General modelling guidelines:

   I. Scentre Group will provide relevant Revit standards upon request for the Contractor to follow. If the Contractor elects to use other standards, the data shall be consistent, systematic and well organised. This applies to Revit worksets and object categories/sub-categories in particular.

   II. The services drawing model shall share the same origin and coordinate system as the architectural model.

   III. The services model must follow the same general data structure as the architectural model; typically the building is split into ‘zone models. The Project Manager may be accepted a single model for a discipline or trade subject to agreement prior to commencement of documentation.

   IV. Elements shall be modelled using correct element types and with minimal use of ‘generic’ models/in place families. For example, ducts are created as ducts, beams as beams and so on.

   V. Shop drawing Revit phasing shall follow the architectural model, new construction, stage 2 etc.

   VI. CAD file format for shop drawing submission:

      i. File format: Autodesk Revit is preferred. Other Autodesk Revit compatible Building Information Model 9MIM) file formats will be considered.

      ii. File naming: Files are named in accordance with project number / project initials / portion of the project / service discipline. The following is an example for submitted file name:

      10509_SC_100M_Mech.RVT

      iii. Working units and location: BIM origin and scale is to match Scentre Group supplied base BIM file.

1.14.5 OPERATION AND MAINTENANCE MANUAL

a) Format: A4 size loose leaf, in commercial quality, 4 ring binders with hard covers, each indexed, divided and titled. Identify each binder with printed title ‘Operation and Maintenance Manual’ to spine and on the cover. Identify title of project, volume number and date of issue on the cover.

b) Contents: Include the following:

   I. Table of contents.

II. Directory: Names, addresses, and telephone and fax numbers of consultants, contractors, and names of responsible parties.

III. General description of installations.

IV. System description: Technical description of the systems installed. Identifying function, normal operating characteristics, and limiting conditions.

V. Design:

   i. Design parameter, assumptions and standards referred to.

   ii. Print out of full hydraulic calculations.

   iii. The control program based on the protocol.

VI. Equipment description:

   i. Names, addresses, telephone and fax numbers of manufacturers and suppliers of items of equipment installed.

   ii. Schedule (system by system) of equipment, stating locations, duties, performance figures. Use unique item number cross-referenced to the work-as-executed drawings.

   iii. Manufacturer's technical literature for equipment installed.

VII. Operating Procedures:

   i. Manufacturer's literature as appropriate.

   ii. Safe starting up, running-in, operating and shutting-down procedures for systems installed. Include logical step-by-step sequence of instructions for each procedure.

   iii. Control sequences and flow diagrams for systems installed.

   iv. Schedule of fixed and variable equipment settings established during commissioning.

VIII. Maintenance Procedures:

   i. Maintenance procedures.

   ii. Detailed recommendations for preventive maintenance frequency and procedures.

   iii. Safe trouble-shooting, disassembly, repair and reassemble, cleaning, alignment and adjustment, balancing, and checking procedures. Provide logical step-by-step sequence of instructions for each procedure.

   iv. Schedule of spares recommended to be held on site.

   v. Instructions of use of tools and testing equipment.

   vi. Emergency procedures including telephone numbers for emergency services and procedures for fault finding.

IX. Certificates:

   i. Copies of manufacturer's warranties.

   ii. Certificates from authorities and certifiers.

   iii. Product certification.

   iv. Test and balancing reports.

X. Drawings:

   i. Work-as-executed drawings contained in plastic envelopes.

   ii. Electrical circuit schedules.

XI. Timing:

   i. Draft: Submit draft manual 8 weeks before Completion.

   ii. Final copy: Submit final copy prior to Completion.

XII. Quantity: Submit 3 hard copies, and 1 copy of .pdf files on CD ROM.

1.15 LOG BOOKS

a) General: Provide a log book for each of the following systems:

I. Automatic fire sprinkler system to AS 1851.3;

II. Automatic fire detection and alarm system to AS 1851.8;

III. Emergency warning and intercommunication system to AS 1851.10; and

IV. Portable fire extinguishers to AS 1851.1.

b) Volume: Provide sufficient pages to receive entries for a period of not less than 24 months.

c) Provide sufficient pages to receive entries for a period of not less than 24 months.

2 AUTOMATIC FIRE SPRINKLER SYSTEMS

2.1 GENERAL

Remote alarm monitoring: Connect the sprinkler installations, via the fire alarm system, to a remote fire alarm monitoring station.

2.2 FIRE PUMPSET

a) Type: Single stage, end-suction, horizontal shaft pumps.

b) Construction:

I. Materials:

i. Casings: Cast iron.

ii. Shafts: Stainless steel Grade 431.

iii. Impellers: Grade 836B bronze.

II. Coupling: General: Direct couple pumps and motors using flexible spacer couplings which are enclosed in coupling guards.

III. Shaft seals: Provide mechanical seals compatible with carbon elements rotating against a ceramic stationary face.

c) Installation:

I. Bases: Mount pumps and motors on a mild steel base sufficiently rigid to prevent distortion.

II. Inertia bases: Fix the pump assembly on an inertia base.

III. Mounting: Mount the inertia base on a concrete plinth with anti-vibration spring mounts.

IV. Test line: Provide a suitably sized test line, which includes a flow meter.

V. Automatic air release valve: Provide except for pumps with vertical discharge.

d) Control: Provide a pump controller for the following:

I. Auto-start: By FM approved pressure switch (Pressure sensing line to FM Global Standard).

II. Pump stop: Manual stop only.

III. Remote alarm monitoring: Provide low level interface with BMS for remote monitoring of the following alarm:

i. Pump running;

ii. The controller main switch has been turned to “off” or “manual” position;

iii. Loss of power supply; and

iv. All local alarms.

e) Diesel pump only:

I. Duplicate batteries: One set for automatic starting and one set for manual starting.

II. Engine cooling: Manual by-pass provided.

III. Circulation relief valve: Provide 19mm circulation relief valve unless the diesel drive takes cooling water from the pump discharge.

IV. Battery charger: Individual charger for each battery set. Provide alternator/generator for battery charging.

V. Speed governor: Capable of keeping engine within ± 10% of rated speed and tamper resistant.

VI. Fuel supply: 5.1 liter/kW + 10%. Fuel gauge provided.

VII. Instrument panel: Complete with oil gauge, temperature gauge, tachometer, hour meter, and ammeter.

VIII. Over-speed shutdown: Provide.

IX. Jacket water heater, oil heater and power fail relay: Provide.

X. Local visible and audible alarm: High temperature, over-speed shutdown, low oil pressure, fail to start, battery charger failure.

XI. Attempt to start cycle: The attempt to start cycle shall be fixed and consist of six crank periods of approximately 12-second duration separated by five rest periods of approximately 15-second duration. In the event that the engine does not start after the completion of the "attempt to start" cycle, the controller should stop all further cranking and generate local and remote alarm.

2.3 SPRINKLER JACKING PUMPS

a) General: Provide jacking pump to automatically maintain uniform pressure for sprinkler installations.

b) Minimum flow rate: 10 l/min.

c) Type: Automatically controlled, electrically driven high pressure in-line circulating pump. Generally comply with the requirements END-SUCTION CENTRIFUGAL PUMP except as follows.

I. Mounting: Suitable for mounting with the shaft vertical or horizontal.

II. Coupling: Close-coupled.

III. Radial bearings: Ceramic sleeve or ball bearing.

IV. Axial bearings: Carbon/ceramic sleeve or ball bearing.

V. Casing arrangement: Back pullout.

VI. Sealing: Seal motors and electrical connections to protect against ingress of condensation.

2.4 WATER STORAGE TANKS (METAL)

a) General: Provide storage tank as suction tank or break tank.

b) Construction:

I. General: Modular bolted steel construction, fabricated heavy gauge steel plate panels, reinforced with stays and struts for maximum strength complete with vermin proof cover.

II. Material: All panels, stays, struts and cover shall be hot dip galvanised.

III. Bolts and nuts: Stainless steel bolts nuts and washers.

IV. Minimum base plate metal thickness: 3mm

V. Wall and top panels: 2.4mm

VI. Internal lining: Not required.

VII. Seam: External.

VIII. Baffling: As required.

c) Fixing: Elevated by concrete plinth and fully supported by galvanised steel beams to provide adequate access to the base of the tank in accordance with confined space requirements. Support beams shall be anchored both to the base of the tank and the plinth.

d) Hydraulic components: Provide the following:

I. Manual quick-fill.

II. Make up water.

III. Automatic inflow if required.

IV. Pump suction lines.

V. Fire Brigade connection if required.

VI. Overflow.

VII. Tank drain and sludge valve.

VIII. Pump testing inlet.

e) Maintenance facilities: Provide access manholes and ladders.

f) Water level alarm control:

I. Provide stainless steel liquid level sensing probe with PVC casing.

II. Provide a control panel with audible and visual alarm indications (high water level and low water level).

III. Interface with BMS: Provide low level interface with BMS at the control panel for remote alarm indication.

g) Capacity: Capacity of water storage tank shall be determined as follows:

I. Suction tank: Amount of water contained between the maximum water level in the tank and the lower water level before a vortex is created causing the pump to draw air.

II. Break tank: the break tank shall be sized so that the amount of water contained between the level 0.6 m of the pump suction line vortex plate and the level where the automatic infill valves begin to operate.

2.5 PIPES AND FITTINGS

a) Pipe materials: Steel pipes.

b) Joints: Select from the following:

I. Screw joints.

II. Proprietary roll grooved coupling specifically designed for fire protection systems.

III. Welded joints: Only for connection to existing pipework.

2.6 VALVES AND ACCESSORIES

a) Alarm Valves. Type: Full way, swing type.

b) Stop Valves

I. Construction:

i. < 50 mm diameter:

(1) Body: Bronze.

(2) Seat: Bronze.

ii. ≥ 50 mm diameter:

(1) Body: Cast iron.

(2) Seat: Bronze.

c) Air Bleed Valves. Provide brass air bleed valves, suitable for connection to 12 mm hose fittings, at the high points of the system.

d) Pressure Gauges. Size: Minimum dial diameter 100 mm, with normal pressure reading at 50 % scale.

e) Pressure Switches.

I. Type: FM approved. Totally enclosed, waterproofed type, rated to at least 1 A.

II. Protection: Provide check valves or of non-corrosive diaphragms with 2 mm orifices with pressure sensing line to protect pressure switches from pressure surges on pump start-up.

f) Flow Switches

I. Type: Single pole, magnetic switch type, suitable for the pressure range.

II. Zones: If sprinkler systems are divided into zones, provide flow switches to indicate the zones in which the sprinklers have operated.

III. Test valves: Provide automatic solenoid test valves complete with isolating valves and permanent connection to drain. Control test valve from the FIP.

g) Orifice Plates: Minimise use of orifice plates.

h) Valve Monitoring device: Provide monitoring device for all control valves, fitted with internal supervisory switches each having SPDT contacts. The electrical ratings for the switch contacts are 10 A at 240 V a.c. and 1.5 A at 0 - 30 V d.c.

2.7 SPRINKLERS

a) General: Provide sprinklers for adequate fire protection for the intended building structure.

b) Sprinklers – Standard:

I. Heat actuated element: Glass bulb.

II. Discharge orifice: 15 mm or 20 mm as required. 10mm discharge orifice not to be used.

III. Mounting positions: Pendant or upright as appropriate.

IV. Temperature rating:

i. Malls and retail areas: 74 °C.

ii. Reserve and stock areas: 141 °C.

iii. Other areas: To AS 2118.

c) Sprinklers - extended coverage: Not to be used.

d) Sprinklers - quick response:

I. Heat actuated element: Glass bulb.

II. Discharge orifice: 15 mm/ 20 mm as required.

III. Response time index: 50.

IV. Mounting positions: Pendant, upright or horizontal sidewall as appropriate.

V. Temperature rating: 68 °C.

e) Sprinkler guards: Provide sprinkler guards in accordance with AS 2118, and for sprinklers mounted at less than 2400 mm above floor level, except for concealed sprinklers.

f) Types: Provide the following types of sprinklers:

I. Type A :

i. Type: Standard sprinklers with natural bronze finish and no escutcheon plate.

ii. Application: Use in areas having exposed piping.

II. Type B :

i. Type: Flush sprinklers with 2-piece chrome plated or powder coated escutcheon plate of selected colours, and fixed deflector.

ii. Application: Use for mounting on suspended ceiling.

III. Type C :

i. Type: High temperature (> 74 °C) sprinklers with natural bronze finish and no escutcheon plate.

ii. Application: Use in high temperature areas.

IV. Type D :

i. Type: Sprinkler with anti-freezing solution, natural bronze finish and no escutcheon plate.

ii. Application: Use in low temperature areas.

V. Type E :

i. Type: Open spray sprinklers with natural bronze finish and no escutcheon plate.

ii. Application: Use with multiple control.

VI. Type F:

i. Type: Concealed type incorporating a cover plate that is released during a fire.

ii. Application: Use for mounting on suspending ceiling with ceiling height < 2.4 m.

2.8 INSTALLATION

a) Dissimilar metals: Join dissimilar metals using fittings of electrolytically compatible material.

b) Accessibility: Provide access and clearance at fittings that require maintenance or servicing, including valves and joints intended to permit pipe removal. Arrange piping so that it does not interfere with the removal or servicing of associated equipment or valves, or block access to ventilation opening.

c) Cleaning: Before installation, remove loose scale, burrs, fins and obstructions.

d) Protection: During construction, prevent the entry of foreign matter into the piping system by temporarily sealing the open ends of pipes and valves using purpose-made covers of pressed steel or rigid plastic.

e) Installation: Install piping in straight lines at uniform grades with no sags. Arrange to prevent airlocks.

f) Arrangements: Arrange and support piping so that it remains free from vibrations whilst permitting necessary movements. Minimise the number of joints.

g) Spacing: Wherever possible, provide at least 25 mm clearance between pipes and between pipes and building elements.

h) Flexible tube assemblies: Fix the flexible tube assemblies to the ceiling support with factory-fitted clips. The assembly can be unclipped before the removal of the ceiling.

i) Cover plates: If piping emerges from exposed building surfaces, provide cover plates of non-ferrous metal, finished to match the pipe, close fitting and firmly fixed in place.

Nominal Pipe Size	Cover Plate Diameter
< 20	65 mm
≥ 20, < 50	100 mm
≥ 50	50 mm larger than pipe

j) Plugs: Provide plugs in distribution pipes at maximum spacing of 15 m to allow for future range pipework.

k) Flushing connections: Provide flushing connections at the ends of all cross mains, consisting of a threaded nipple and approved mechanically grooved end cap. Use nipples of the same diameter as the end pipe but not larger than 50 mm.

l) Test connection: Provide 25 mm diameter test connections at the most remote sprinkler branch lines, discharging at a point outside the building. Provide access to the test valve.

m) Drain valves: Connect the sprinkler system and auxiliary drain valves to the nearest convenient points of the drainage system.

n) Locking: Padlock drain and air bleed valves in the closed position.

o) Corrosion protection: Provide protection to the corrosion - susceptible parts of the sprinkler system.

p) Galvanising: Galvanise steel pipe supports, fabricated components, bolts and nuts, washers and clips installed in damp conditions, or exposed to weather.

q) Painting: Do not paint surfaces which must be unpainted for the correct operation of the sprinkler system, such as bearings and sliding surfaces, adjustable screw threads and discharge heads.

r) Pipe hangers: Subject to the following maximum spaces:

   I. Pipes up to 32 mm diameter: 3.6 m.

   II. Pipes > 32 mm diameter: 4.5 m.

s) Section between adjacent grooved couplings: At least 2 hangers.

2.9 SPARES CABINETS

a) General: Provide a spares cabinets in each sprinkler valve room or sprinkler pump room, of size sufficient to contain the stock of spare and tools with a lockable hinged door. Store each item separately on clips or in drawer compartments.

b) Construction: Form from machine-folded sheet metal with returns on free edges.

c) Spare sprinklers: Provide the following spare sprinklers:

Type A	Type B	Type C	Type D	Type E	Type F
36	24	12	6	6	6

d) Pumpset spare part: A list of spare parts which are necessary for maintenance shall be drawn up by the manufacturer, spare parts shall be provided according to the list not less than the following:

   I. 2 sets of fuel, lubricating oil and air filter elements and seals;

   II. 2 sets of belts;

   III. 1 set of engine gaskets, joints, washers, and hoses; and

   IV. 1 complete injector.

2.10 MARKING

a) General: Provide block plans, location plans, and emergency instructions.

b) Material: Legibly print or engrave block plans and emergency instructions on durable material resistant to defacement, at least 3 mm thick or mounted on board at least 3 mm thick.

c) Hydraulically designed systems: Identify hydraulically designed systems by a permanently attached label of corrosion resistant material at the base of the sprinkler riser, showing the system design information.

d) Spares cabinets: Label spares cabinets 'SPARE SPRINKLER' or 'SPARE PUMP PARTS' as appropriate in letters at least 30 mm high.

3 AUTOMATIC FIRE ALARM AND CONTROL SYSTEMS

3.1 GENERAL

a) General: Provide automatic fire alarm and control systems comprising the following:

I. An automatic fire detection and alarm system.

II. A fire fan control and indication system.

III. Smoke and fire door release devices.

IV. Fire station connection.

b) Open protocol: The system must be based on open protocol which is available from the manufacturer to certified contractors for programming and maintenance purposes. There must be at least three qualified contractors in the State in which the project is located.

c) Surge protection: Ensure that normal operation is maintained and that damage is not caused to control and indicating equipment by voltage surges in the power source.

d) Sealed Batteries: Recycle the batteries, ensuring that at least 100% of normal capacity is available at Completion.

e) Off-site alarm monitoring: Connect the installation to the off-site fire alarm monitoring station.

3.2 CONTROL AND INDICATING EQUIPMENT

a) General: Provide fire indicator panels, sub-indicator panels, repeater panels, and mimic panels as required for the proper operation of the system.

b) Spare Capacity: Provide minimum 25% spare capacity in each panel for future expansion, including all necessary hardware and firmware.

c) Construction: Provide metal cubicle type enclosures.

d) Fire Indicator Panels (FIP):

I. Grade 1.

II. Individual alarm zone indicator: Provide.

III. Fire fighter facility (FF): Provide common control FF.

IV. Main power failure signal: Provide.

V. Provide isolating facilities to enable tests to be carried out such that:

i. No alarm signals will be transmitted to the remote monitoring station.

ii. No alarm indication (audible and visual) on the repeater panels.

VI. Graphical User Interface (GUI): Where documented, provide a GUI comprising a PC with 17" LCD colour touch-screen graphical display unit complete with window-based software for the following functions :

i. Menu.

ii. Individual point service access.

iii. Historical log information.

iv. Network diagnostics.

v. Graphical screens for alarm indicator and isolation, manual control and status indication of fire fans.

VII. Repeater Panels (RP) for Centre Management: Provide a RP in the Centre Management Office with an alphanumeric display for the following:

i. Individual alarm zone indicator.

ii. Alarm zone isolation.

VIII. RP for major tenants: Provide a RP for each major tenant with an alphanumeric display for the following:

i. Individual alarm zone indicator for the alarm zones of the tenant's premises only.

ii. Alarm zone isolation for the alarm zones of the tenant's premises only.

IX. Alarm signalling equipment: Provide a fire alarm transmitter complying with AS 4428.6 for transmission of fire alarm to remote monitoring station.

X. Interface with other systems: Where documented, interface with:

i. MECP for emergency warning.

ii. FFCP for smoke management.

iii. BMS. Provide high level interface with BMS based on BACnet protocol for automatic testing and report. Provide BACnet gateway/router as necessary.

iv. Standby power supply: Provide voltage free contact of general fire alarm and connect to the controller provided by the electrical services contractor in the Fire Control Room to switch off the fuel pum:

3.3 SMOKE DETECTOR

a) Type:

I. General: Single point photoelectric type.

II. Atria:

i. Optical beam type, or multi-point-aspirated photoelectric smoke detectors. Nominal response threshold not more than 5% Obs/m sensitivity.

ii. Multi-point aspirated smoke detector. Nominal response threshold not more than 4% Obs/m sensitivity.

III. Air ducts or plenum: Duct sampling unit or multi-point-aspirated photoelectric smoke detector.

b) Compatibility: Smoke detectors shall be compatible with the Fire Indicator Panel. For extension to existing systems, ensure that the detectors used are compatible with the existing system.

c) Self-indicating detectors:

I. Provide a light emitting diode mounted in a clearly visible position, which illuminates whenever detector operation causes an alarm condition to register on the fire indicator panel. Provide self-indicating devices that, if faulty, will not render the detector inoperative under fire conditions.

II. Mounting positions of light emitting diodes:

i. Visible detectors: On the outside of the detector or its base.

ii. Detectors concealed above ceilings: On the underside of the ceiling immediately below the detector.

iii. Detectors in other concealed spaces: On a visible panel close to the entry to the concealed space housing the detector.

III. Installation: Install detectors so they can be easily inspected and tested in situ, and readily withdrawn from service.

3.4 HEAT DETECTORS

a) Type: Sealed type marked for 200 ^{o}C.

b) Compatibility: Smoke detectors shall be compatible with the Fire Indicator Panel. For extension to existing systems, ensure that the detectors used are compatible with the existing system.

3.5 MANUAL CALL POINTS

a) Type: “Break the Glass” type.

b) Spare Glasses: Provide 10 spare glasses.

3.6 ALARM BELLS

a) Power supply:

   I. To the main bell and up to 2 others: From the fire indicator panel battery power supply.

   II. To additional bells: From the mains supply. Provide appropriate relays, operated by the fire indicator panel.

3.7 FIRE FAN CONTROL AND INDICATORS SYSTEM

3.7.1 GENERAL

a) Provide automatic control and manual override facilities on a fire fan control panel for the following:

   I. Smoke exhaust fans.

   II. Air pressurisation fans.

   III. Supply air fans used for smoke control.

   IV. Car park ventilation fans.

   V. Smoke control dampers.

3.7.2 FIRE FAN CONTROL PANELS (FFCP)

a) Enclosure: Provide metal cubicle-type enclosures, to match fire indicator panel enclosures.

b) Fan status monitoring: Provide pressure switches to monitor the operating status of fire fan.

c) Graphical Interface: Interface with the FIP to provide manual control from, and fire fan status indication on the touch-screen.

3.8 SMOKE AND FIRE DOOR RELEASE DEVICES

a) General: Provide electromagnetic door holders to hold open smoke and fire doors and to release the door to close upon receipt of alarm signal from the automatic fire detection and alarm system.

b) Manual Release Switches: Provide non-locking manual release switches integrated with the electromagnetic door holders.

c) Warning Devices: Provide an audible warning device and a red flashing warning light of suitable intensity on both sides of sliding fire doors, smoke doors and fire shutters.

d) Signs: Provide signs on both sides of the doorway and directly over the opening, stating 'WARNING - FIRE DOOR' in letters at least 50 mm high in a colour contrasting with the background.

3.9 AUTOMATIC SMOKE CURTAIN

a) Construction: The smoke curtain shall be of non-combustible and non-shatterable construction in compliance with the BCA and BS 7436. The automatic smoke curtain shall consist of a compact header box and flexible curtain connected to a control system. The curtain shall be manufactured from reinforced fibreglass material with a Class 1 surface spread of flame rating when tested to BS476.6, and be able to withstand temperature of in excess of 600°C for 120 minutes when tested in accordance with EN12101.1. The curtain shall be provided with a triangular section steel bottom rail which is attached to the curtain and is designed to stop into a recess flush with the plaster board ceiling when raised. The bottom rail shall be complete with a self levelling bottom bar to completely conceal the bottom rail. The finishing colour of the bottom bar shall match the finish of the ceiling.

b) Operation: The smoke curtain shall be activated upon receipt of an alarm signal from the FIP. Deployment of the curtain shall be by gravity at a descending rate of approximately 4.5 m/min. A 240 V tubular motor which incorporates an electromagnetic brake, adjustable mechanical upper and lower limits shall be used only to rewind the curtain on reset of the alarm.

c) Indicator: Audible and visual indicators shall be provided for curtain activation.

3.10 WIRING

a) Installation:

I. Cable routes: Use most direct route. Run cables in false ceiling spaces, wall cavities, and conduits. Do not run cable on surfaces. Run cables parallel to building lines. Keep clear of other services.

II. Continuity: Unless unavoidable due to length or difficult installation conditions, run cables without intermediate joints.

b) Concealed wiring: Conceal wiring runs, except within plant rooms, sprinkler valve rooms and fire control room. Install concealed wiring so that it can be re-wired easily and without damage to finishes or materials. Install exposed wiring in conduits.

3.11 BLOCK PLANS AND OPERATING INSTRUCTION

a) General: Provide block plans and emergency instructions for control indicator equipment and fire fan control panel.

b) Provide block plans showing the following:

I. Fire alarm zone layout.

II. Smoke detector circuit layout.

III. Fire fans layout.

c) Material: Legibly print or engrave block plans and emergency instructions on durable material resistant to defacement, at least 3 mm thick or mounted on board at least 3 mm thick.

d) Operating Instruction: Provide simple, concise, step-by-step operating instructions with graphical illustrations mounted in a glass frame and fixed next to the FIP, MECP, SMS and other equipment.

4 SOUND SYSTEMS AND INTERCOM SYSTEMS

4.1 GENERAL

a) General: Provide the following for emergency purposes:

   I. A sound system for emergency purposes only or combined with PA system.

   II. An intercom system for emergency purpose.

   III. The sound system shall comprise a MECP, ECP, manual call points, amplifiers, loudspeakers and visual warning devices.

b) Evacuation tone: IS 8201 T3 pattern, synchronised.

c) Ancillary functions: With a system combined with PA system, use the system for public address and background music in malls and common areas for non-emergency purposes. Override the ancillary functions in emergency conditions.

d) Loudspeakers: 100V line speakers complete with power taps of the following type;

   I. In areas with suspended ceiling: Flush mounted.

   II. In covered car park: Surface mounted.

   III. Outdoor: Pole-mounted or wall-mounted, weather-proof.

4.2 MASTER EMERGENCY CONTROL PANEL (MECP)

a) General: Provide 1 MECP for the entire building.

b) Location: Locate the MECP in the fire control room.

c) Main equipment: Provide main equipment in the MECP.

d) Type: Discrete type, with individual function switches and displays for each evacuation zone.

e) Spare Capacity: Provide minimum 25% spare capacity in each panel for future expansion, including all necessary hardware and firmware.

f) Interconnection: Interconnect the MECP with emergency control panels, fire indicator panel and public address control panel.

g) Batteries: Use sealed batteries.

4.3 EMERGENCY CONTROL PANEL (ECP)

a) Type: Discrete type with individual function switches and displays for each evacuation zone.

b) ECP for Centre Management: Provide the following:

   I. Auto/Manual/Isolate control for all evacuation zones of the building.

   II. Audible and visual indicators.

   III. A graphical operator-interface.

   IV. A hand-held, noise-cancelling microphone complete with press-to talk switch and a retaining clip.

   V. A WIP with audible and visible call signals.

c) ECP for major tenants: Provide an ECP for each major tenant as specified by the major tenant; otherwise with the following facilities:

   I. AUTO/MANUAL/ISOLATE control for the evacuation zone of the tenant's premises.

   II. Audible and visual indicators.

   III. A WIP with audible and visible call signals.

   IV. Overriding of the local PA system.

4.4 STORED VERBAL MESSAGE

a) Provide digitally stored verbal messages for the following:

I. Evacuation instruction.

II. Public address in non-evacuation areas.

4.5 VISUAL WARNING DEVICES

b) Warning signs

I. Labelled in red with 25 mm letter.

II. Internally illuminated type, flashing and synchronised.

c) Strobe lights

I. Complete with red colour 'evacuation' strobe light and amber colour 'alert' strobe light, synchronised.

II. T3 pattern to ISO 8201.

4.6 COMBINED SOUND SYSTEM FOR EMERGENCY PURPOSE (SSEP) AND PUBLIC ADDRESS (PA)

4.6.1 GENERAL

a) General: The system shall function as a SSEP in emergency situation, and shall be used for a public address and background music broadcasting purpose in normal situation.

b) Performance: In addition to meeting the requirements of a SSEP, the system should be capable of providing high quality background music and speech broadcast to the nominated areas in the shopping centre, suitable for the acoustical environment (high ambient noise level, low absorption coefficient) of the building. Sound distribution throughout the mall shall be uniform, sound intrusion into the shops and adjacent zones should be contained, and conversation among customers should not be unduly hampered by the broadcast.

c) System components: The system shall comprise the following integrated components:

I. All components required of a SSEP including MECP, ECP, amplifiers and loudspeakers. Components which are for both SSEP and PA shall comply with the requirements of the above Australian Standards and the following specification, whichever is higher.

II. A DSP/Matrix.

III. A paging system comprising paging consoles and microphones.

d) Sound level: Design the system to achieve a sound level of least 15 dBA above the ambient noise levels of the building, which can be taken as:

I. Mall: 60 dBA.

II. Food court and entertainment and leisure precinct (ELP): 70 dBA.

III. Amenities: 40 dBA.

4.6.2 DSP/MATRIX

a) General: The DSP/matrix shall have with built-in digital message player, amplifier monitoring, automatic switchover to backup amplifier and loudspeaker line monitoring. The DSP/matrix shall be compatible with off-the-shelf 100V amplifier and 100V loudspeakers.

b) Specification:

I. Automatic gain control for individual zones.

II. Individual control for each input and output level.

III. Parametric equalization.

IV. Remote control of racks from a master location.

V. Monitoring of incidents: All incidents shall be recorded into a data file which can be consulted on the PC of the BMS.

VI. Fault alarm: Any system fault detected shall be displayed on the BMS.

VII. 24V DC power supply with battery backup.

VIII. System setup: Provide configuration software for loading onto the BMS so that system setup can be executed on the BMS PC. Access to the system shall be password-protected.

c) Interface with the BMS: Provide high level Interface with BMS based on BACnet protocol for control and system setup. Install all necessary software in the BMS server.

d) Manufacturer: Ateïs Model SINAPS or equivalent.

4.6.3 AMPLIFIERS

a) General: Provide amplifier(s) for individual zone.

b) Backup amplifier: Provide a backup amplifier which has a power output rating equal to that of the highest rated duty amplifier.

c) Performance characteristic:

I. Output: 100 V line output.

II. Specification:

i. Frequency response (1W): 80 Hz – 200 kHz (+/- 1dB)

ii. Power bandwidth (- 3 dB): 85Hz – 20KHz.

iii. THD @ 1 kHz, -3dB: ≤ 0.5%.

iv. S/N ratio: ≥ 94 dB.

d) Rated power output: The rated power output of the amplifier must not be less than 150% of the total connected power (tapping) of the loudspeakers of the circuit.

e) Manufacturer: Australian Monitor Synergy Series or equivalent.

4.6.4 PAGING CONSOLES

a) Paging consoles shall have back-lit LCD touch screen for man-machine interface and information display, a high quality Omni directional microphone and a built-in loudspeaker for monitoring. The paging console shall perform the following minimum functions:

I. Process and route calls including group calls and all calls functions

II. Pre-call chime and digital messages

III. Press-to-talk or ON/OFF buttons

IV. Music ON/Off, route, select and control of level of music source.

V. Fault alarm

b) Manufacturer: Ateïs Model PSSDT or equivalent.

4.6.5 LOUDSPEAKERS

a) General: Provide 100 V speakers as follows:

I. Mall, offices, amenities and retail areas with suspended ceiling: Ceiling mounted loudspeaker with metal grill.

II. Car parks: Surface mounted horn speaker with cone driver.

III. Other areas: As documented.

b) Minimum performance: 100V loudspeaker complete with power taps in compliance with AS 2220.1.

c) Type:

I. Type A: Flush mounted on suspended ceiling and bulkhead generally except where ceiling depth is insufficient.

i. Type: Duo cone loudspeaker complete with ported and damped metal backbox.

ii. Size: 165 mm diameter minimum, with metallic grille of powder coated finish and selected colour.

iii. Rated output power: 30W minimum.

iv. SPL 1W @ 1m: 89 dB.

v. Frequency response: 75 Hz to 25 kHz or better.

vi. Manufacturer: Redback Audio Model C2191 or equivalent.

II. Type B: Used where Type A is not suitable due to limited ceiling depth.

i. Type: Coaxial duo cone loudspeaker.

ii. Size: 165 mm diameter minimum, with metallic grille of powder coated finish and selected colour.

iii. Rated output power: 15 W minimum.

iv. SPL 1W @ 1m: 88 dB.

v. Frequency response: 55 Hz to 15 kHz or better.

vi. Manufacturer: Redback Audio Model C2121 or equivalent.

III. Type C: Pendant speaker used in atria where flush mounted loudspeakers on surrounding bulkheads are not suitable.

i. Type: Duo cone ball speaker. With Omni directional sound distribution.

ii. Size: 100 mm diameter minimum, with white ABS plastic enclosure.

iii. Rated output power: 15 W minimum.

iv. SPL 1W @ 1m: 88 dB.

v. Frequency response: 80 Hz to 20 kHz or better.

vi. Manufacturer: Redback Audio Model C1050/C1055 or equivalent.

IV. Type D: Surface mounted loudspeaker for use in covered car park.

i. Type: Surface mount 100mm dual cone driver. Direct mount on underside of concrete slab.

ii. Casing: White industrial grade polypropylene with concealed internal fixing.

iii. Rated power: 5 W minimum complete with variable taps.

iv. SPL 1W @ 1m: 92 dB.

v. Effective frequency range: 100 Hz to 20 kHz.

vi. Manufacturer: Redback Model C0701 or equivalent.

V. Type E: Other loudspeaker as documented.

d) Design:

I. General: Distribute loudspeakers evenly to avoid local areas of excessive output and 'blind spots'.

II. Ceiling speaker:

i. Space loudspeakers with medium overlap such that no spots are outside the -6 dB coverage pattern of the speakers. (In determining the coverage of speakers, use the Listening Plane coverage angle of speaker instead of Polar coverage angle).

ii. Forming regular pattern on ceiling plan.

iii. Maximum spacing: 6 m.

III. Loudspeakers for car park: Minimise sound intrusion into the neighbour properties.

e) Individual volume control: Flush wall-mounted with stainless plate.

4.6.6 LINE LEVEL INPUT POINTS

a) General: Provide line level 3-pin XLR audio input points and connect to the SMS.

b) Finish: Provide stainless steel plate.

4.6.7 EQUIPMENT RACKS

a) General:

I. Central rack: Provide a standard 19" professional lockable mounting rack cabinet to house the DSP/Matrix and music equipment. The cabinet shall be of metal construction with clear transparent front door and fan assisted ventilation. Allow storage space for music equipment, amplifier and accessories.

II. Amplifiers which are not housed in the MECP or the central rack shall be rack mounted, and located inside fire rated and secured rooms.

b) Label the equipment by engraving on the equipment case the words 'SCENTRE GROUP PROPERTY'.

c) Local monitoring loudspeaker: Provide for the central rack.

d) Locate the central rack in the Centre Management Office

4.7 INTERCOM SYSTEMS FOR EMERGENCY PURPOSES (ISEP)

a) Installation:

I. Cable routes: Use most direct route. Run cables in false ceiling spaces, wall cavities and conduits. Do not run cable on surfaces. Run cables parallel to building lines. Keep clear of other services.

II. Continuity: Unless unavoidable due to length or difficult installation conditions, run cables without intermediate joints.

b) Concealed wiring: Conceal wiring runs, except within plant rooms, sprinkler valve rooms and fire control room. Install concealed wiring so that it can be re-wired easily and without damage to finishes or materials. Install exposed wiring in conduits.

4.8 BLOCK PLANS & OPERATING INSTRUCTION

c) General: Provide block plans and emergency instructions for control indicator equipment and fire fan control panel.

d) Provide block plans showing the following:

I. Fire alarm zone layout.

II. Smoke detector circuit layout.

III. Fire fans layout.

e) Material: Legibly print or engrave block plans and emergency instructions on durable material resistant to defacement, at least 3 mm thick or mounted on board at least 3 mm thick.

f) Operating Instruction: Provide simple, concise, step-by-step operating instructions with graphical illustrations mounted in a glass frame and fixed next to the MECP, SMS and other equipment.

5 PORTABLE FIRE EXTINGUISHERS

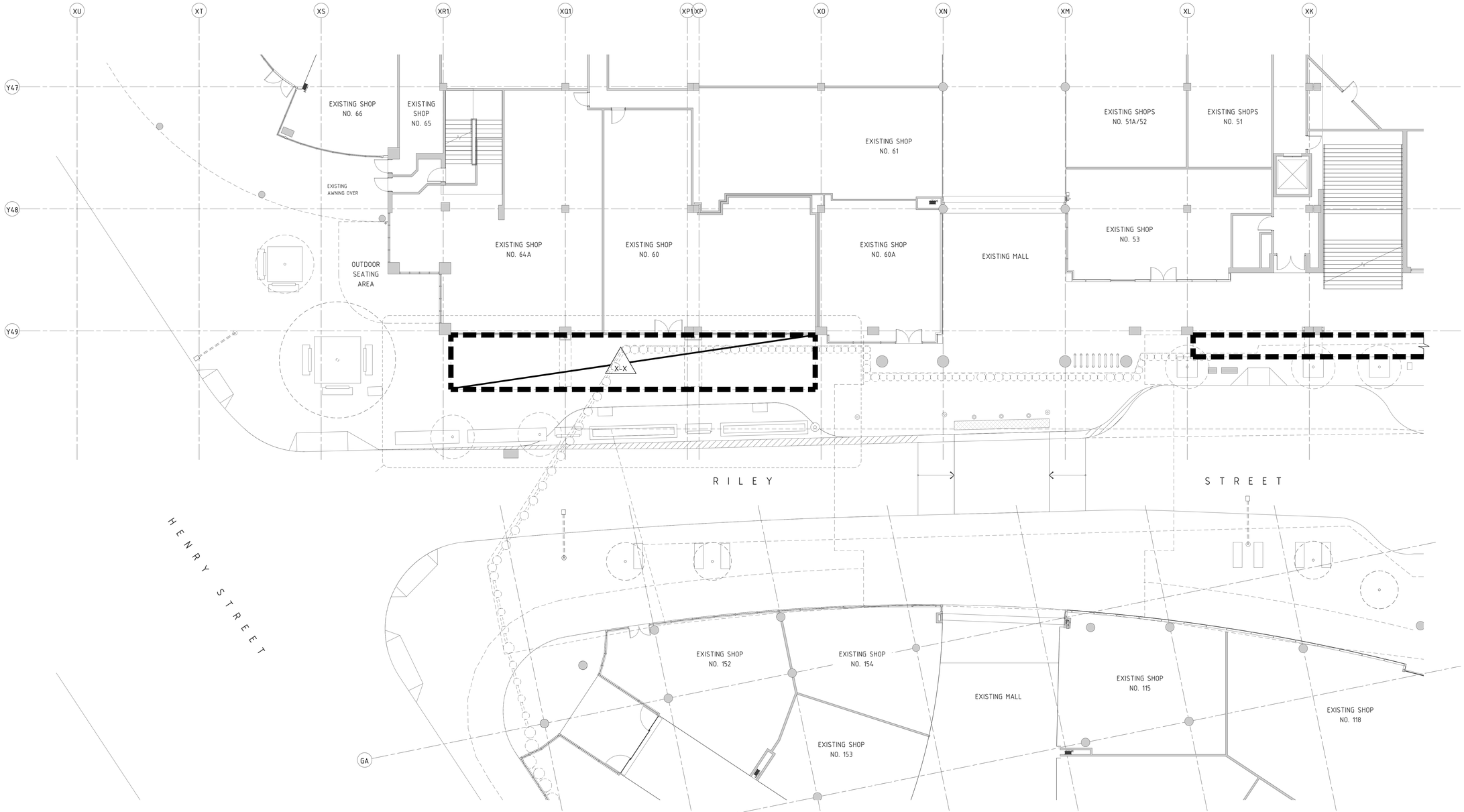
5.1 GENERAL

Fire extinguisher cabinets:

a) General: Provide cabinets for fire extinguishers located in car parks and other public area subject to vandalism.

b) Type: Lockable sheet metal cabinets.

SK-F10.0001[3]



01 FLOOR PLAN – SOUTH

RILEY STREET UPGARDE 1:100

CAD REF.:

SCOPE OF WORKS:

1. PROVIDE SPRINKLER PROTECTION TO NEW AWNINGS AND MODIFIED COLLONADE INCLUDING CONCEALED SPACES IN ACCORDANCE WITH AS2118.1-1999. SPRINKLERS TO BE SERVED OFF EXISTING ADJACENT SPRINKLER ZONE. CONTTRACTOR TO CONFIRM SPRINKLER ZONE ON SITE.
2. UPDATE ALL BLOCK PLANS TO INCLUDE NEW AREAS.

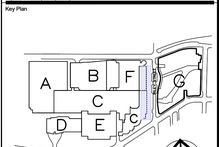
0 1m 2m 3m 5m 10m

SCALE = 1:100

FOR CONTINUATION REFER TO DWG: SK-F10.0002

Rev	Date	By	Chk	Description
3	27.04.2017	WN	LH	REVISED ISSUE FOR TENDER
2	23.06.2016	WN	LH	REVISED ISSUE FOR TENDER
1	17.12.2015	WN	LH	ISSUED FOR TENDER
A	17.11.2015	WN	LH	PRELIMINARY ISSUE

Key Plan



General Note

ALL DIMENSIONS TO BE CHECKED ON SITE. WRITTEN DIMENSIONS ONLY TO BE USED. REFER TO ALL DETAIL DRAWINGS. DO NOT SCALE FROM DRAWINGS. ANY DISCREPANCIES TO BE REPORTED BEFORE COMMENCING WORK. REFER ANY DISCREPANCIES TO THE ARCHITECT. DO NOT SCALE FROM DRAWINGS.

SCENTRE GROUP

Owner and Operator of Westfield in australia and New Zealand

PENRITH

Scentre Group Design & Construction Pty Limited
85 Castlereagh Street Sydney NSW 2000
Phone (02) 9358 7000 Fax (02) 9028 8500
GPO Box 4004 Sydney NSW 2001
ACN 090 897 359

Title

FIRE SPRINKLER PROTECTION SERVICES - RILEY STREET UPGRADE FLOOR PLAN SOUTH

Drawn By	Design By	Checked By
S.L.	W.N.	L.H.
Drawing Scale	CAD File	Plot Date
1:100	SK-F100001_CAD.dwg	27/04/201
Project No	Drawing No.	Revision
C57490	SK-F10.0001	3

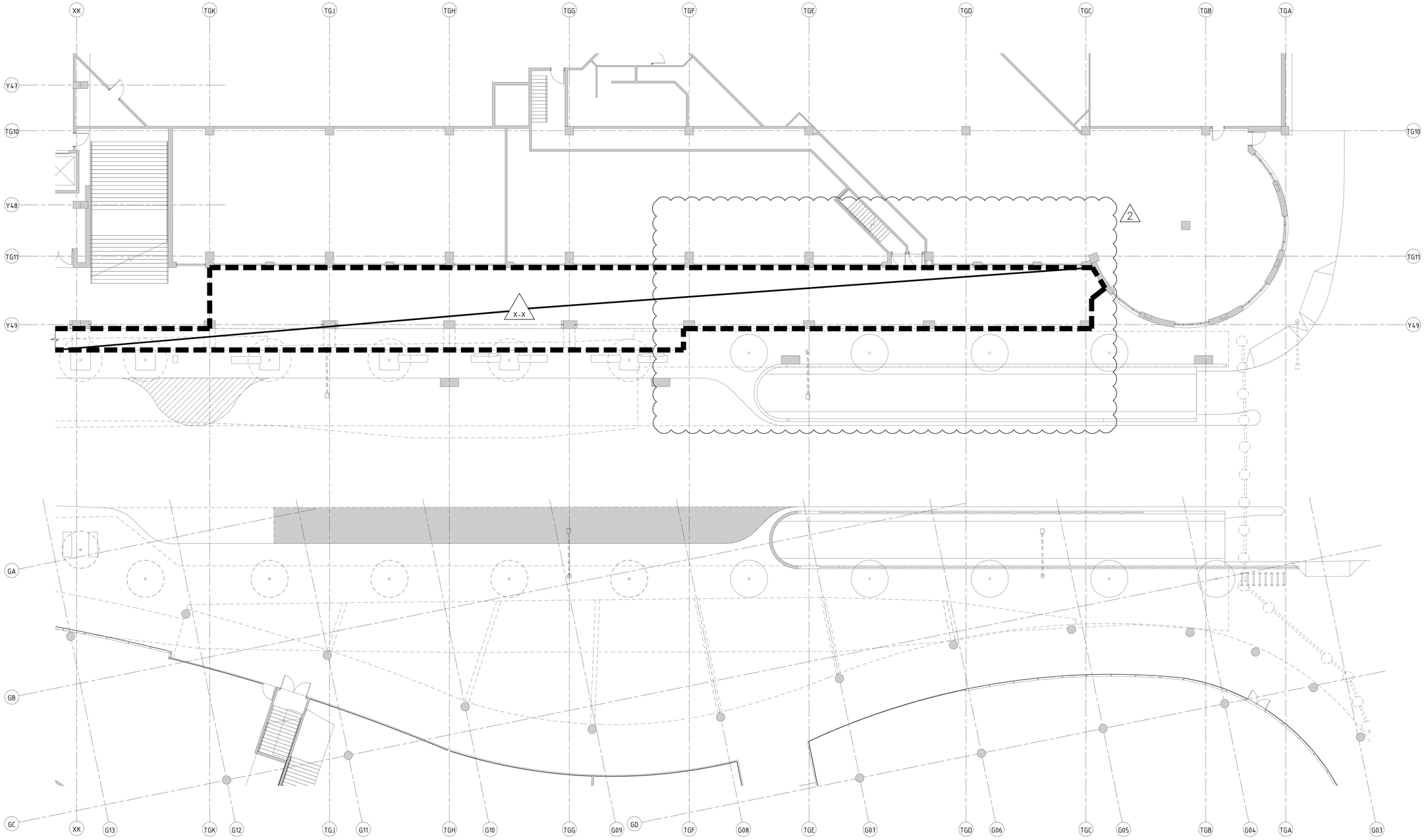
TENDER

Drawing to scale at A0

T:\PENRITH\C57490 SP RILEY STREET COLLONADE OUTDOOR SEATING\03 SERVICES\02 DRAWINGS\03 FIRE\CD\SK-F100001_CAD.dwg

SK-F10.0002[2]

FOR CONTINUATION REFER TO DWG: SK-F10.0001



01 FLOOR PLAN – NORTH

RILEY STREET UPGARDE 1:100

CAD REF.:

SCOPE OF WORKS:

1. PROVIDE SPRINKLER PROTECTION TO NEW AWNINGS AND MODIFIED COLLONADE INCLUDING CONCEALED SPACES IN ACCORDANCE WITH AS2118.1-1999. SPRINKLERS TO BE SERVED OFF EXISTING ADJACENT SPRINKLER ZONE. CONTRACTOR TO CONFIRM SPRINKLER ZONE ON SITE.
2. UPDATE ALL BLOCK PLANS TO INCLUDE NEW AREAS.

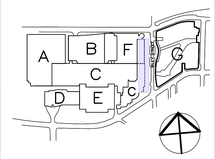
0 1m 2m 3m 5m 10m

SCALE = 1:100

TENDER

Rev	Date	By	Chk	Description
2	23.06.2016	WN	LH	REVISED ISSUE FOR TENDER
1	17.12.2015	WN	LH	ISSUED FOR TENDER
A	17.11.2015	WN	LH	PRELIMINARY ISSUE

Key Plan



General Note

ALL DIMENSIONS TO BE CHECKED ON SITE; WRITTEN DIMENSIONS ONLY TO BE USED. REFER TO ALL DETAIL DRAWINGS, STRUCTURAL, MECHANICAL & SERVICES DRAWINGS BEFORE COMMENCING WORK; REFER ANY DISCREPANCIES TO THE ARCHITECT. DO NOT SCALE FROM DRAWINGS.

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ACN 090 697 266

Title

FIRE SPRINKLER PROTECTION SERVICES - RILEY STREET UPGRADE FLOOR PLAN NORTH

Drawn By	Design By	Checked By
S.L.	W.N.	L.H.

Drawing Scale	CAD File	Plot Date
1:100	SK-F100002_CAD.dwg	28/06/2016

Project No	Drawing No.	Revision
C57490	SK-F10.0002	2

Drawing to scale at A0

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