JAMES COOK UNIVERSITY AUSTRALIA

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Technology Solutions
Digital Infrastructure Delivery

JCU Guidelines for Contractors installing Gallagher Access Control

Version 3.2

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Document Information

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https://www.jcu.edu.au/estate-directorate/campus-planning/information-for-consultants-and-contractors

Definitions

Terms	Definition
BG	Break Glass (Alarm/Alert Type)
BMS	Building Management System, for managing a building's mechanical and electrical systems, to optimize performance, energy efficiency, and occupant comfort.
Communications cabling	All cabling, e.g. copper and fibre optic cables, for transmitting data to services.
Communications infrastructure	All infrastructure components that transmit data including but not limited to: Network Switches and Routers, WiFi Access Points and cabling.
Contractor	A Gallagher Channel Partner contracted to install and configure/program Gallagher devices for a specific project.
DID	JCU's TSD Digital Infrastructure Delivery group
DIP	JCU's TSD Digital Infrastructure Provisioning group
DOTL	Door Open Too Long (Alarm/Alert Type)
FAME	Facilities Access Management Environment – JCU's Secure Access Management systems. Includes Gallagher, Salto, Integriti and DSX @May 2025.
FD	Forced Door (Alarm/Alert Type)
JCU	James Cook University
JCU Premises	Premises that provide services to JCU staff, students and researchers, including but not limited to main campus buildings, remote sites, and student accommodation facilities.
Network Camera	Digital cameras that are generally used for surveillance. The successor to the analog closed-circuit TV (CCTV) systems that have been around since the 1940's, but instead of a dedicated network, they use the local TCP/IP network, which also provides Internet access. Also called IP Cameras.
REX	Request to Exit (Alarm/Alert Type)
TCP/IP	Transmission Control Protocol/Internet Protocol. A set of standardized rules that allow computers to communicate on a network.
TSD	JCU's Technology Solutions Directorate
VMS	Video Management System, for managing cameras, recorders and associated video footage.

Contents

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https://www.jcu.edu.au/estate-directorate/campus-planning/information-for-consultants-and-contractors

Please note the following specifications detail the JCU equipment and installation standards. The final design for any implementation must be authorised by the JCU FAME Business Owner.

SECTION 1: Overview

1.1. Overview

This document details requirements for the installation and configuration of Gallagher security and access control systems and products on-site at the James Cook University. The implementation of the processes within this document are to be applied and tailored specifically to each installation to meet the needs of the University.

1.2. Scope of Works

This general specification will detail the performance requirements for the works that are to be carried out. This shall apply to the installation, supply or service of security and access control solutions to be delivered to the James Cook University.

1.3. Review Process

In the best interest of both the James Cook University and the Contractor it is a requirement that once final planning of scope and design of a security & access control implementation has been defined it is submitted to the JCU FAME Business Owner. A final review of the proposed design and the day-to-day functional operation of the planned installation will be carried out.

SECTION 2: FAME (Facilities Access Management Environment) – Access Control System

2.1. The System

This specification calls for the supply, installation and commissioning of extensions and modifications to the existing James Cook University system currently installed in various buildings and facilities in Australia. All sections of the James Cook University system are to be installed in accordance with appropriate local and international standards including NCC.

2.2. FAME Servers

The existing JCU Gallagher and Salto Servers will control the FAME function at all sites. There will be no requirement for additional head ends located at any site.

2.3. Controllers

Only Gallagher 7000 Series Controllers are to be used and shall be installed in Communications rooms as indicated on the drawings. Exceptions only to be approved by the JCU DID Manager.

2.4. Physical Enclosures

All Gallagher equipment shall be installed in Gallagher dual cabinets complete with a Gallagher 8 Amp power supply, lockable door, and must be Gallagher master key compatible. No cable entry shall be achieved through the underside of a Gallagher dual cabinet.

The sticky label provided by Gallagher for every cabinet, controller and expander must be filled out neatly and be identical to the completed and approved names as programmed into the Gallagher system. The labels must be neatly fixed to the inside of the cabinet door.

All field equipment enclosures shall be steel fabricated, powder coated and be fitted with cabinet tamper detection switch capable of detecting any attempt to remove the cover and any attempt to remove the enclosure from its mounting surface. Tamper switches are to be monitored by the FAME Gallagher system.

2.5. Power Supply

All controllers are to be powered by a 240 VAC GPO. The security contractor must liaise with the electrical contractor for the installation of this GPO.

- Where possible, this should be sourced from “Essential Supplies” power. The supply circuit breaker shall be labelled "SECURITY ACCESS SYSTEM - DO NOT SWITCH OFF".

- All GPO’s that support the Access Control/Surveillance systems must be contained either within a secure room or within a locked cabinet. These GPO’s must not be directly accessible by unauthorised people under any circumstances.

- The power supplies shall be connected to the base building Fire Indicator Panel (FIP) via the fuse card. The security contractor must liaise with the fire contractor for the connection to the FIP.

The provision of all low voltage power to all cabinets, racks, monitors, switches, computers etc., is the responsibility of the successful contractor. This includes all cabling, conduit, wiring, terminal blocks, fuses etc., and any other items that may be necessary for the operation of the equipment.

The minimum size of cables shall be 2.5 mm2 (7/0.67) for 240 Volt circuits and 1.0 mm2 (7/0.40) for ELV power circuits. Due consideration shall be paid to voltage drop when calculating cable sizes.

On activation of the building fire alarm the fuse card is to trigger and the ability to remove power from individual doors shall be achievable through this device. Any FIP which has the ability to affect a Gallagher access control door must be monitored by the Gallagher system as an input.

The Fuse Card/Fire Trip, Battery Low/Fail and Mains Fail shall be monitored individually by the JCU FAME Gallagher system.

2.6. Batteries

All Gallagher equipment powered from the AC Mains supply shall incorporate a dedicated connection for ONLY re-chargeable batteries to provide backup power in the event of Mains supply failure. Provide battery back-up with minimum capacity of 8 hours. Any batteries used shall consist of maintenance free sealed lead acid cells, 12 Volt 7.5 AH as a minimum size. The installation date shall be written on the exterior of the battery with a permanent marker.

The equipment shall provide a suitable circuit to charge the batteries during normal operation. From flat the batteries need to recharge to full capacity within 24 hours. The JCU FAME Gallagher system shall be set up to monitor mains failure and low battery.

Each installation shall provide a battery maintenance schedule to be incorporated into the general Estate battery maintenance program.

2.7. Keypad Control

The FAME system has multi-tenancy capacity for the monitoring and operation of different areas independently. This shall be achieved by using a T20 Multi Tech Terminal, Black in colour at the main staff entry door.

The system shall be capable of being used in a multitude of environments with all aspects of operation and programming being fully customisable to suit the needs of the client.

Standard height of keypads will be 1200mm to allow best access for all individuals including those using wheelchairs or other assistive devices.

2.8. Alarm Outputs

Internal and external audio-visual alarm units are to be installed both externally and internally to the site. External audio alarms are to reset after 8 minutes. Internal audio-visual alarm units shall continue to operate until the alarm is reset. External visual alarm units are to include a flashing blue strobe light.

2.9. Alarm Inputs

Alarms generated from the Gallagher System are to include, FD & DOTL alarms, Break Glass alarms, Intruder Detection alarms and tamper alarms, Mains Fail, Battery Low and communications failure. Inputs are to be installed as a Normally Closed device and shall present as Closed status in the software. The only Inverted inputs shall be REX buttons.

All End of Line Resistors shall be encapsulated within the devices and be 4K7/4K7

All inputs must connect to an individual alarm input, the only exception is a set of double doors, where each leaf is to be monitored in series as one input. Inputs shall be in a Closed Status in their Normal condition, ‘input is inverted’ shall only be used to ensure correct door operation when REX buttons are installed.

2.10. Network Communications

All network cabling must be installed in compliance with JCU DID specification. The current standard can be found at the below URL.
https://www.jcu.edu.au/estate-directorate/campus-planning/information-for-consultants-

and-contractors

JCU will provide the necessary switch port(s) to allow connection to the JCU network. Any device connected to the JCU network will need to be DHCP compliant, written consent from the JCU DIP Manager to install non-DHCP compliant hardware must be obtained, before the installation of the hardware. The contractor must use a DHCP compliant version of hardware if one is available from the manufacturer.

The successful contractors must liaise with and take direction from the JCU DIP personnel based in each Campus. All Network cabling patch leads installed for the FAME system shall be **Pink** and labelled *Security*.

2.11. System Programming

The successful contractors must be Gallagher certified and JCU approved. For JCU Cybersecurity compliance, Gallagher Operator accounts can only be created and setup by approved JCU DIP staff. Operator logons will only be provided to an individual person and are not to be shared or used by anyone other than the intended operator.

For each project, the contractor is to supply all programming, equipment, hardware, software licenses (including doors), cabling and ancillary services as required, to provide a functioning addition to the JCU FAME Gallagher system.

The Programming will include all requested access groups, individual doors including correct naming and function, time zones, alarm points, text and location names and site plan icons. Site/floor plans will be preinstalled into the JCU FAME Gallagher system by the JCU DIP group. The Programming will also include the continuation of all JCU specific functions including but not limited to Action plans, icon assignment, Alarm instructions, SMS notifications and external door lockdown. This should be completed in consultation with the JCU Manager, Security & Estate Facilities and the JCU Manager, Infrastructure Provisioning.

The settings for DOTL alarms and REX Buttons on access controlled doors will be specified by the JCU Manager, Security & Estate Facilities.

The JCU Naming Convention must always be followed. All devices attached to a door must have the same name as the door, with the addition of the ‘device programmed name’ (as below). Doors must have individual access zones named the same as the door, if a door requires two access zones, ‘Entry’ and ‘Exit’ shall be added to the door name for those access zones.

The naming convention will be obtained and confirmed from JCU Project Manager and JCU DIP staff for each installation.

For access controlled room doors, the room number used will be the room being entered. Below are examples of the naming convention to be followed.

Gallagher Programmed Name	Campus ID	Building Code	Room Number	Description
TSV 027-S002A Stairwell REX	TSV	027	S002A	Stairwell REX
TSV 506-U002 Foyer (Entry 5)	TSV	506	U002	Foyer (Entry 5)
CNS B001-116 TSDIS Office	CNS	B001	116	TSDIS Office
EMD 002-C01 Battery Low	EMD	002	C01	Battery Low

Note: Use a space between the Campus ID and the Building Code, a dash between the Building Code and the Room Number, and a space between the Room Number and the Description. The “C01” in the Emerald (EMD) example above is the Gallagher Controller number.

Devices shall be named as per the above naming convention, with the inclusion of the ‘Device Programmed name’ added to the end of the ‘Gallagher Programmed Name’ (listed below).

Physical Device	Device Programmed name
Reed Switch	Reed
Lock Sense	LS
Tongue Sense	TS
Hub Monitor	Hub
Magnetic Lock Bond Sense	Bond
Request to Exit	REX
Break Glass	BG
Lock (output)	Lock
Door open too long	DOTL
Passive Infrared Detector 90	PIR
Passive Infrared Detector 360	PIR 360
Duress Button	Duress
Fridge Alarm	Fridge
Freezer Alarm	Freezer
Cool Room Alarm	Cool Room
Tamper	Tamper
Mains Fail	Mains Fail
Battery Low	Battery Low
Fuse Fail	Fuse Fail
Fire Panel, General Fire Alarm	Fire Panel Alarm
Fire Panel, Fault	Fire Panel Fault
Fire Panel, any active Isolation	Fire Panel Isolation Active

2.12. Software/Licenses

Additional software should not be required, as JCU has an existing licensed Gallagher server.

All licenses required for the works are to be supplied to JCU’s DIP group by the contractor and shall be in the name of James Cook University. The JCU DIP group staff will add these licenses to the JCU Gallagher system.

2.13. Site Plans

Blank Site Plans (building floor plans) will be preinstalled into the JCU FAME Gallagher system by the JCU DIP group.

The contractor will be required to add all configured Doors to the site plans.

2.14. Card Readers

Unless otherwise advised by the JCU DIP group, Gallagher T15 Multi Tech Readers,

Black in colour shall be installed.

Standard height will be level with the door handle or at 1100mm where no other reference point is defined and no more than 400mm from the door to be controlled.

Card Readers shall not be mounted Back-to-Back on either side of a wall. However, should be mounted offset at a distance to maintain integrity of card reader operation.

The final site positions of individual readers shall be agreed with the JCU Manager, Security & Estate Facilities, the JCU Manager, Digital Infrastructure Provisioning and the contractor, taking into consideration appearance, functionality and wiring access.

2.15. Cards

Access Control Cards will be supplied and programmed by JCU.

2.16. REX Buttons

Request to Exit (REX) Buttons shall be advised by the project and installed in the locations where fixed handles, magnetic locking or Auto doors are used. The exact location shall be agreed with the architect, interior designer, sub- contractor and JCU, considering appearance, functionality and wiring access.

All REX buttons shall be mounted at the same height throughout the installation. This device will be monitored as an input in the FAME System only and shall not control the lock locally. REX inputs will need to be inverted through the software to work correctly when attached to doors.

All Free Handle doors shall have a REX input monitoring the free handle action.

2.17. Break Glass Units

Emergency Break Glass (BG) units shall be advised by the project and installed in the locations where egress is controlled by an electronic locking device and free handle egress is not supplied. The exact location shall be agreed with the architect, interior designer, sub- contractor and JCU, considering appearance, functionality and wiring access.

All BG units shall be mounted at the same height throughout the installation and in a manner which will allow the future installation of a REX, if required. The break glass sounder must be connected for local audible function.

The unit shall remove power from the locking device and generate an alarm in the FAME System. If the unit affects an access control door it must be programmed in the ‘emergency release’ section of the door programming.

2.18. Forced Door and Door Open Too Long Alarms

All access control doors will have Forced Door (FD) and Door Open Too Long (DOTL) alarms to help manage the site security.

All hardwired doors shall have an audio-visual warning device located on the secure side, above the door, on the ceiling. In Residential locations, additional action plans will be required to email residential staff when this device or the reed switch associated with this

device is tampered with.

The exact location shall be agreed with the architect, interior designer, sub-contractor and JCU, taking into account appearance, functionality and wiring access.

All access control doors will require a standard reed switch to achieve this functionality.

2.19. Door Hardware

Refer to the JCU Design Guidelines.

2.20. Magnetic Reed Switches

Magnetic reed door contacts shall be flush mount end on end reeds, of rugged construction and fitted to the leading edge of the door frame. Magnetic reed door contacts shall be installed on each leaf of double doors as a single monitored Gallagher input in series.

Magnetic reed switches shall be installed on all external perimeter doors for Monitoring Purposes.

A Roller shutter door contact shall be installed on the secure side of the roller door.

2.21. Lift Control

The final site positions of the individual readers within the lift cars shall be agreed with the architect, lift installer, sub-contractor and JCU, taking into account appearance, functionality and wiring access.

The Reader Interface Modules shall be installed in the security riser on the same floor as the lift motor room.

The Lift Module shall provide for “Normally Open” and “Normally Closed” Dry Relay Contacts to Enable/Disable Floor call buttons for each Lift Car to be controlled as detailed on the plans provided. These Relay Contacts shall be electrically isolated from the Access Control system.

Access rights associated with a presented JCU Card will be checked for validity based on access time and any other access management function defined in the system. Floor call button access shall be granted or denied, dependant on the access privilege programmed in Gallagher.

If the user does not have access to call the car, the car shall not move.

The nominated hours of operation of lift control will be specified by the JCU Manager, Security & Estate Facilities.

2.22. Services Integration

The successful tenderer may be required to adopt and develop the universities vision for centralised security management. To satisfy the requirements of this vision, provision may be required for building systems to be integrated into the Gallagher system.

a. BMS and Lighting Systems

All new security installations may require provision for low level relay control and monitoring of Building Management Systems and approved Lighting systems. The contractor will liaise with the site electrician to arrange the required system connections.

This may include the monitoring of any cool room using inputs into the Gallagher controller that will be programmed to trigger an alarm on the campus security phone on the alarm trigger.

Outputs may be required to be programmed to trigger relays to allow for Gallagher operation of installed Lighting systems throughout the proposed installation.

2.23. Salto Wireless Access Control

If required by the project, the Gallagher integrated Salto wireless door escutcheon may be the prescribed product to be used on internal doors requiring a lock, e.g. accommodation rooms.

Where Salto Access Control Locks are to be used, they must conform to the JCU Design Guidelines.

Naming of the doors shall be as directed by the JCU Naming Standard.

a. Salto Online

All Salto hardware and online door licenses are to be purchased and installed via an authorised Gallagher Channel Partner. Standard Salto hardware from any other source will not be accepted.

The Salto escutcheons are to be programmed by the successful tenderer in accordance with plans supplied and include the requirements of the JCU Manager, Security & Estate Facilities.

Salto online is not to be used for external doors or timetabled spaces.

b. Salto Wired (Hot Spot) Access Reader

Where Salto update readers are required, the Salto wired hotspot reader shall be installed externally to the main front entry of the building as directed by the JCU Manager, Security & Estate Facilities. This reader shall open the door on presentation of a valid, authorised JCU Card.

This shall be configured so the JCU Card (with Salto config) operates the door. The Salto reader must be connected to the Gallagher system which shall operate the door.

c. Salto Offline

There will be no installation of Salto Offline access control on external doors due to the requirement to maintain live system auditing capabilities. The only exception being plant rooms with no through access.

2.24. Electronic Lockers

All Electronic Locker Solutions installed at JCU, will be the Traka by ASSA ABLOY Global Solutions locker management solution, as recommended by Gallagher. The final design of the solution must be approved by the JCU FAME Business Owner.

SECTION 3: System Installation

3.1. Cable Reticulation

All wiring shall be run inside the secure area of the premises with all cabling for the FAME System concealed in ceiling spaces, wall cavities, equipment cabinets and field devices. All redundant wiring shall be removed.

Where the above is not possible, install surface mounted conduits.

All terminations for the FAME System are to be within cabinets, enclosures, panels, detectors, housings, etc.

All network patch cables installed in the Communications rooms for the FAME System shall be Cat 6a, pink and labelled security.

All cable penetrations must be fire stopped as required by local fire codes and ordinances. FAME System conduits and sleeves must be fire stopped using a UL-listed fire stop putty or fire rated blanket approved for such use.

Do not attach cables to ceiling hangers or any other service support. No cable, cable tray/ladder, cable duct or other horizontal cable component above the false ceiling shall be tied off to any light fixture, supports for any light fixture, electrical conduit, supports for any electrical conduit (Unistrut-Type structures excepted), sprinkler pipe, or any type of support for the sprinkler system.

All wiring in which kinks or abrasions occur will be condemned and shall be replaced by the installer at their own expense.

Provide all wire and cable required to install systems as indicated. Wire and cable shall be sized to provide minimum voltage drop and minimum resistance to the devices being supplied. All cables shall be specifically designed for their intended use. Comply with equipment manufacturers' recommendations for wire, fibre, and cable. Colour codes shall be consistent in cables used for the same purpose. Comply with all applicable codes and ordinances; the insulation shall be to AS/NZS3000 as applicable.

Where joining of wiring cannot be avoided, wiring shall be joined using solder within panels, cabinets, or field equipment. Jointing of cables external to a device will not be permitted.

Where wiring is to be run in the ceiling space it shall be neatly run in a regular manner and fixed at 1250mm intervals. Multiple runs shall be tied together along the common route at 500mm intervals and shall be either fixed to a cable tray or catenary. Cables shall not be left lying on the false ceiling. Cables will be neat, tidy and run-in order so it is possible to follow a single cable in a run over its entire length.

Due consideration shall be paid to voltage drop when calculating cable sizes.

All wiring shall comply with the latest issue of the requirements of the Local Supply Authority and AS/NZS3000 where relevant, any additional requirements specified hereunder, and the installation and cable route shall be to the satisfaction of the Project Manager.

The minimum size of cables shall be 2.5 mm2 (7/0.67) for 240 Volt circuits and 1.0 mm2 (7/0.40) for ELV power circuits. Due consideration shall be paid to voltage drop when calculating cable sizes.

3.2. Conduits General

Where cables can be concealed satisfactorily in ceiling spaces, and wall cavities, or they are run inside the secure area, conduits are not required. Where conduits are necessary, the following shall apply:

- Conduits shall be of minimum size 25 mm diameter, circular in section and shall be run so as to enable cables to be drawn-in after erection; sufficient accessible junction boxes shall be used for this purpose.
- Inspection fittings shall not be used for drawing in any cables.
- Where conduits are run on the surface on outside walls or exposed to the weather or are at risk of physical damage, the conduit shall be class 'B' galvanised steel screwed.
- Conduits shall be neatly run and securely fastened by means of approved saddles. All fixings, fastenings and supports shall be of adequate strength and arranged to ensure the installation against mechanical failure under normal conditions of use and wear and tear.
- Saddles shall be provided within 150 mm of all fittings or terminations.
- Rigid or flexible conduit drops shall be provided as required to provide connection to equipment.
- The direction of conduit runs shall be parallel to the walls, floors, and ceilings, wherever practicable.
- The successful tenderer shall be responsible for the true horizontal or vertical installation of all boxes and fittings.
- Where junction boxes are exposed to the weather, the lids shall be sealed with an approved gasket.
- The boxes shall be of ample size to enable the cables to be neatly diverted from one conduit to another without undue cramping.
- Conduits shall be run concealed wherever possible.
- Surface conduits shall be run to be as inconspicuous as possible by running in corners, etc.
- The JCU Project Manager shall approve the route of all surface conduits before installation is commenced.
- Exposed conduits shall be painted to match the surrounding surface. All exposed equipment that forms part of the system shall be painted to match the surrounding surface.

3.3. Steel Conduit

Install steel conduit in areas where physical protection is required. Where steel conduits are necessary, the following shall apply:

- Steel conduit shall be manufactured in accordance with AS.2052.

- All burrs shall be removed from ends and screwed bushes shall be fitted to the ends of conduit runs.
- All conduits shall be straight, free from rust and scale and any sets shall be made cold in such a manner as not to distort the walls of the conduits.
- No threads shall be visible after erection other than running joints.
- Running threads shall be thoroughly painted with corrosion inhibiting paint prior to assembly.
- Pressed metal boxes shall be used for flush wall mounting equipment.
- Boxes shall have adjustable threaded fixing devices to permit flush mounting of the cover plate.

3.4. Rigid PVC Conduit

- Where rigid PVC conduits are necessary, the following shall apply:
- Rigid PVC conduit and fittings shall be in accordance with AS.2053.
- All joints shall be cemented with approved cement and fittings shall be of rigid PVC.
- Conduits and fittings damaged during installation or delivery will be condemned and shall be removed from site.
- Rigid PVC conduit shall be securely fastened with approved saddles spaced to prevent sagging.
- All sets and bends in rigid PVC conduit shall be made using internal springs of the correct size to prevent wall collapse, conduits in which any collapse of walls is evident will be condemned.

3.5. Cable Trays

The JCU Project Manager shall approve the route and type of all cable trays before installation is commenced. Where more than 25 cables are required to be grouped together, a cable tray shall be used not catenary wire. Catenary wire can be used for 25 cables or less.

Install cable trays as follows:

- All cable trays required for the FAME System shall be neat and tidy.
- Cable trays shall be admiralty pattern, manufactured from hot dipped zinc plated sheet steel or Cablofil wire mesh systems.
- The zinc coating shall be Z300 complying with AS1397.
- Steel sheet shall be a minimum of 1mm thick for 75mm wide trays, progressing to
- 2.5mm thick for 900mm wide trays.
- Edges shall have 90-degree folds of sufficient width to prevent sag and buckling between supports.
- Perforations in the cable tray shall be sized to accept expanding or clip type fasteners designed for the application.
- Fix cable trays using the Unistrut system and provide the necessary clearance for installation of cables.
- Space fixing points at a maximum of 1200mm intervals. Intervals shall be determined by the cable load capacity to prevent sag in all runs.

3.6. Labelling

Sample labels for all components of the FAME System shall be provided for approval by the JCU Manager, Digital Infrastructure Provisioning prior to installation.

Cable labelling schedules shall be prepared specifically for the project. All cables used for the FAME System, shall be labelled at each end.

All labels will be machine printed using black text on a white background. Cable labels must use white self-laminating cable labels with black text.

All Control Panels and Enclosures shall be labelled.

The 240V supply for any FAME device shall be labelled:
"SECURITY ACCESS SYSTEM - DO NOT SWITCH OFF"

All access-controlled doors shall have appropriate signage and labels. All access doors shall be provided signage that reads:
“ACCESS CONTROLLED DOOR. DOOR IS NOT TO BE LEFT OPEN”

All fire stair doors and fire exit doors with intruder detection systems installed shall be provided signage that reads:
“DOOR ALARMED 24 HOURS. EMERGENCY EXIT ONLY”

SECTION 4: Commissioning

4.1. Acceptance Test Plan (ATP)

The Contractor shall verify that the installed and commissioned system delivers the specified functionality and performance as a total system. The methodology shall be documented by the Security Contractor in an ATP and supplied 7 days prior to witness testing to the JCU Manager, Security & Estate Facilities, the JCU Manager, Digital Infrastructure Provisioning and the JCU Project Manager for sign off.

4.2. Checks Undertaken Prior To Final Testing

Full commissioning checks must be undertaken prior to final testing and commissioning. All faults must be rectified at this time. Final commissioning actions and results must be fully documented. The results must form part of the As-Installed documentation.

Commissioning Checklists will be produced, referenced and completed during commissioning. All items will be checked as completed, and on project handover the commissioning checklists will be signed by a representative of both the contractor and the JCU.

Battery back-up tests and system monitoring and reporting confirmation, programming, system maps and setup and action texts must be proved at final testing and actions and results must be fully documented. The results must form part of the As-Installed documentation.

A 14-day fault free period must be achieved after final commissioning and before practical completion of the works.

4.3. Final Testing and Completion

Utilising the completed checklists, as installed documentation, battery test sheets and monitoring reports, the system will be tested by the JCU Manager, Security & Estate Facilities and the JCU Manager, Digital Infrastructure Provisioning.

When defects or incomplete works are discovered during the final test, a supplementary test at another date will be required and as such the Contractor will be subject to full cost recovery.

Following final testing the Contractor will issue a certificate of completion, signed by the Contractor and the JCU Project Manager.

SECTION 5: Maintenance

5.1. General

The contractor will provide the new site with twelve (12) months operational maintenance warranty period commencing from the date of practical completion and final acceptance of the commissioning tests. The site will be deemed to be operational once practical completion status has been granted.

Two (2) periodic maintenance visits are required during the warranty period. One in the first 6 months and the second visit 1 month before the expiration of the warranty period.

During the visits the Contractor shall complete and document the tests. Work required during periodic maintenance visits includes but is not limited to:

- Check all 240 Volt supplies feeding the system.
- Test all power supplies for full operation.
- Test the system on battery power and measure battery start and end voltages.
- Check reed switches, REX devices, locks, tamper switches, card readers etc.
- Check that all panels and termination cabinet connections and contacts are free from corrosion and clean where necessary.
- Check wiring and conduits for tampering and damage.
- Test all devices and ensure that the circuit is sound throughout its entire length.

The maintenance should also include the testing of all alarms and reprogramming of some functions of the FAME System as required by the JCU Manager, Security & Estate Facilities.

Visits are to be advised 14 days in advance to the JCU Manager, Security & Estate Facilities and carried out during normal office hours, in the presence of a nominated JCU Security & Estate Facilities authorised person.

At the conclusion of the warranty period the site will be added into the regular JCU Gallagher Maintenance contract.

5.2. Break Down Call Out Service

For the warranty period the Contractor shall maintain a 24-hour emergency service and advise JCU Security & Estate Facilities of the emergency telephone number.

Whenever required by the circumstances or requested by the JCU Security & Estate Facilities Authorised Person, the following time periods shall apply:

- 1 hour, for the Contractor's Technician to make phone contact with the requesting JCU Security & Estate Facilities Authorised Person.
- 4 hours, for the Contractor's Technician to be on site to examine and repair any

defect or reported fault.

On completion of a breakdown call out service the technician shall enter details of work performed to the JCU Manager, Security & Estate Facilities.

5.3. Hot Line Support Facility

The Contractor shall provide a 24 hour “Hot Line” Operational Support telephone contact number to support JCU for the project and warranty period.

SECTION 6: As Installed Documentation & Drawings

On completion of the project, one (1) hard copy and one (1) electronic PDF copy of the following As Built documentation are to be supplied by the contractor.

As Built documentation is to be issued in a hardbound 4 ring white A4 folder clearly labelled:

JCU FAME System
As-Built Documentation
Site code - Building Number
Security-In-Confidence

The As Built documentation shall include the following sections clearly separated with dividers for easy reference:

- Table of contents.
- Contractor details, including 24-hour service contacts and 24-hour “Hot Line” Operational Support telephone contact number.
- Detailed Scope of works completed for the Security services.
- Bill of materials detailing product descriptions, part numbers, serial numbers and quantities.
- Product information.
- Schematic diagrams.
- Full set of 1:100 scale as built drawings, which must clearly indicate all equipment locations, outlet and device numbers and cable routes.
- Test results, Battery, and monitoring test results.
- Controller, reader, Hub, and Switch Layouts etc.
- Walk test and commissioning information.
- A complete list of all software licences and registration details.

The following electronic versions of documents are also to be supplied by the contractor.

- Bill of materials detailing product descriptions, part numbers, serial numbers and quantities in the form of an MS Excel spread sheet.
- Schematic diagrams in CAD format.
- Full set of 1:100 scale as built drawings in CAD format, which must clearly indicate all equipment locations, outlet and device numbers and cable routes.

SECTION 7: Standards

The following standards are referenced in this specification and apply to this project:

The National Construction Code (NCC)
Australia Communications Authority Technical Standards AS/NZS 3000 SAA Wiring Rules
AS/NZS 1044 Limits of Electromagnetic Interference for Electrical Appliances AS/NZS 1345 Identification of the Contents of Piping, Conduits and Ducts AS/NZS 1367 Multiple Outlet Distribution Systems for Sound and Vision AS/NZS 1768 Lightning Protection
AS/NZS 1939 Degrees of Protection Provided by Enclosures (IP Code) AS/NZS 2052 Metallic Conduits and Fittings
AS/NZS 2053 Non-Metallic Conduits and Fittings AS/NZS 2201 Intruder Alarm Systems
AS/NZS 2279 Disturbances in Mains Supply Networks - Limitation of Harmonics
AS/NZS 2430 Classification of Hazardous Areas
AS/NZS 3147 Approval and Test Specification - PVC Insulated Electric Cables and Flexible Cables
AS/NZS 3159 Television Receiver Safety Requirements

All installed devices are to meet all required C tick Australian standards Any other relevant standards ensuring quality, safety, and system integrity.

Where any of the above applicable specifications, codes and standards conflict, the most stringent specification shall apply.

All works and services provided under this contract as a minimum must be in full compliance with the appropriate Australian Standard relevant to the works and services being carried out and provided by the contractor.