

Consultant Specification

# EvacuElite

Emergency Warning and Intercom System

Approved to AS 4428.16,  
AS 4428.4 and AS 7240.4



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## 1 Revision Status

Revision	Date	Comment
1.0	31/03/2022	Initial Release

COS010 Ampac EvacUElite Consultant Specification

## 2 Disclaimer on System Design Recommendations

Any recommendations on design provided by Ampac are an indication only of what is considered to be the most suitable solution to meet the requirements of the situation at hand.

In some cases, the recommendations on system design provided may not suit the unique set of conditions experienced in a particular application environment.

Ampac has made no inquiry nor undertaken any due diligence that any of the recommendations supplied will meet any particular application.

### 3 Acronyms

<b>AS</b>	Australian Standards
<b>BGM</b>	Background Music
<b>CIE</b>	Control And Indicating Equipment
<b>DGP</b>	Data Gathering Panel
<b>DCPU</b>	Distribution CPU
<b>EDS</b>	Emergency Detection System
<b>EAID</b>	Emergency Alarm Initiating Device (White Emergency MCP)
<b>ECP</b>	Emergency Control Panel
<b>EIS</b>	Emergency Intercom System
<b>EOL</b>	End Of Line (Resistor)
<b>EMP</b>	Emergency Management Plan
<b>EWCIE</b>	Emergency Warning Control and Indicating Equipment
<b>EICIE</b>	Emergency Intercom Control and Indicating Equipment
<b>EWIS</b>	Emergency Warning and Intercommunication System
<b>EWS</b>	Emergency Warning System
<b>FACP</b>	Fire Alarm Control Panel
<b>FDAS</b>	Fire Detection and Alarm System
<b>FDCIE</b>	Fire Detection Control and Indicating Equipment
<b>HLI</b>	High Level Interface
<b>HPA</b>	High Power Amplifier
<b>GUI</b>	Graphical User Interface (Providing Main System Controls And CIE)
<b>ILC</b>	Intercommunication Line Card
<b>LILC</b>	Loop Intercommunication Line Card (Connect Loop Addressable WIP Handsets)
<b>LCD</b>	Liquid Crystal Display
<b>LED</b>	Light Emitting Diode
<b>LPA</b>	Low Power Amplifier
<b>MECP</b>	Master Emergency Control Panel
<b>MIC</b>	Multi-Purpose Interface Card
<b>MOC</b>	Multi-Purpose Output Card
<b>NIC</b>	Network Interface Card
<b>PA</b>	Public Address
<b>PSE</b>	Power Supply Equipment
<b>PTT</b>	Press To Talk (Microphone with On Off Control Switch)
<b>SFP</b>	Small Form Factor Pluggable (Small Transceiver Aka Mini GBIC)
<b>S/N</b>	Signal To Noise Ratio
<b>SPL</b>	Sound Pressure Level
<b>RPC</b>	Remote Paging Console
<b>SECP</b>	Secondary Control Panel
<b>SSISEP</b>	Sound System and Intercom System for Emergency Purposes
<b>VAD</b>	Visual Alarm Device
<b>WIP</b>	Warden Intercom Point

## 4 General Requirements

The installation contractor shall be responsible for the design, supply, installation, commissioning and maintenance of the Emergency Warning Intercom System (EWIS) to the latest Australian standards applicable at the time of tender.

The installation contractor shall have an adequate number of staff trained and experienced in the design, installation, commissioning and maintenance of Fire Detection and Alarm Systems.

The installation contractor shall ensure the following documentation is provided upon practical completion:

- As-installed drawings, which includes system schematic wiring showing location and interconnection of all equipment, and sound pressure levels (SPLs) including the location of reading.
- EWCIE and EICIE Documentation.
- Commissioning Report.
- Contractor's Statement.

## 5 Scope

The **EWIS** or **EWS** system components shall comprise all necessary works and systems to meet the requirements of the following standards in accordance with the system Grade requirement stated below.

Applicable standards shall include but not limited to

- AS1670.4 2018 Fire Detection, Warning, Control and Intercom Systems – System design installation and commissioning. Part 4: Emergency Warning and Intercom Systems.
- AS4428.16 2020 EWCIE Emergency Warning CIE
- AS4428.4 EICIE 2016 Emergency Intercom CIE
- AS7240.4 2018 PSE Power Supply Equipment

See section 8 for more on standards.

The installation shall include the following system design and compliance considerations

- The Building Class as defined in NCC is **Class X**
- The overall building Height is **XX M**
- The EWCIE Grade requirement on this project is **Grade 1**
- The quantity of EWS zones featured on the drawings is **X**
- The quantity of WIP handsets featured on the drawings is **X**

*The tenderer shall consider the optimum number of panels required to best suit the site application / installation: Considerations may include things such as*

- Distribution of any system hardware, where beneficial
- Resulting in the Use of any or all of the following
- MECP SECP Local EWCIE or DGPs

## 6 System Prerequisites

The system shall include the following:

- The system installed shall be Ampac EvacU<sup>Elite</sup> or equal product.
- The EWCIE and EICIE system installed shall have a three-year manufacturer's warranty subject to normal manufacturers Terms and Conditions.
- (Where Local % content provisions shall apply). The system shall be designed and manufactured in Australia.
- The system architecture shall be modular and scalable. The panel design (rack space available) shall allow for 10% future expansion of more module cards unless otherwise stipulated during tender submission.
- Speaker circuits, Visual output circuits and addressable Loop WIPs where installed shall allow an additional 10% extra load capacity unless otherwise stipulated during tender submission.
- The EWCIE and EICIE (Zone control layouts) shall consist of 9-inch TFT LCD 800 x 480 with backlit and resistive touchscreens which can facilitate site specific Zone layout solutions. These shall be fully on site programmable.
- The EWCIE system shall use digital audio throughout including the network.
- The tone generation of "Evacuation Signals" shall be handled within software.
- Pre-recorded message(s) shall be stored as audio files and distributed according to the programmed configuration.
- The EICIE system shall include the following design options and benefits:
  - Loop connected WIP handsets using 2 core UTP in a redundant loop configuration
  - Radial connected handset using dedicated 2 core cable
  - It shall be possible to install both handset types on the same panel or system wide. Loop and or Radial handsets can be selected to reduce the overall system cabling requirements.
- The system shall provide a High-level interface as well as hard contact interface options to an FACP.
- The EWIS and FACP panels may be combined when practical to do so (When space saving and / or cost savings benefits and wiring simplification between systems can be achieved).
- When a combination panel is proposed the system provided shall be interconnected with an HLI (High Level Interface) and be site configurable.
- The system shall be non-proprietary allowing the widest variety and quantity of specialist contractors to install maintain and provide ongoing support in accordance with local standards for the duration of system life. Locally supported non-proprietary products shall be considered favourable.
- The system shall be cost efficient to modify or expand and reconfigure on site by the installer, maintenance provider and the manufacturer as required.
- The system shall be hardware and software supported for spares and upgrades by the manufacturer for a minimum of 10 years from the date of installation.
- The system shall include simulator test sequence software. This means the commissioning engineer can pre-test all Evacuation Signals and Sequence scenarios prior to live testing. The sequence functionality shall be fully tested on screen to determine correct configuration actions are achieved prior to live building tests.

## 7 EWCIE and EICIE System Architecture

The system shall comprise of the following types of module cards (where applicable) organised to suit the specific building or site configuration requirements:

- **Universal Rack Frame** providing up to 16 Card Module slots.
- **24U or 13U Rack size cabinets** which can be multiplied for larger applications.
- **Primary Graphical User Interface (GUI)** to provide Main System Controls and User Menu and system / node LED indicators.
- **Secondary Graphical User Interfaces GUIs** to configure the total number of EWS and EIS zone controls required.
- **DCPU** – The DCPU card fitted into each rack links to the GUIs and controls the cards in the rack frames issuing commands and routing required audio down the rack all-purpose back plane.
- **NIC (Network Card)** Installed when the panel forms part of a network.
- **SFPs** If the system involves an EWCIE and EICIE network the system shall incorporate SFP transceiver connection technologies suitable for the following building services cabling infrastructure.: Copper VDSL ; Fibre Optic and Ethernet. This facilitates various distance capabilities between respective panel nodes
- **Amplifiers** 25-Watt, 50 Watt or 150 Watt
  - 150-Watt amplifier shall have built in 4-way line splitter
  - For larger wattage zone requirements (More than 150W). Multiple amplifier modules of any size can be used to suit the application. The amps may be configured to activate simultaneously providing (One large EWS zone).
  - In this scenario (>150W) each amplifier will have at least one dedicated speaker circuit cable connected.
- **LILC Loop Intercommunication Line Card** Providing connection of up to 40 addressable digital Loop WIP handsets and EAIDs.
- **ILC Quad Radial Intercommunication Line Card** Providing connection of up to 4 Radial WIP handsets and EAIDs.
- **Front panel PTT Microphone** shall be provided to support live speech announcements to a selection of Zones or All zones.
- **BGM source inputs** shall be interfaced via DCPU card inputs. The BGM sources shall be configured in software through respective amplifiers and be site programmable.
- **Addressable loop WIP Handsets** (if fitted) shall support the following features in accordance with AS4428.4 and AS7240.17.
  - Be configurable as redundant loop topology using the LILC.
  - Up to 20 handsets per loop.
  - A maximum distance of 1km per loop.
  - A maximum distance between handsets <500M.



- Each Loop circuit shall use a 2 core UTP Unshielded twisted pair
- Self-healing short circuit isolators on the OUT and IN ports (redundant configuration).
- EAID (white Emergency MCPs) can be connected to each handset via a dedicated monitored input circuit.

**Large Networks**

Speak to your local Ampac representative to help specify an appropriate scope for your project.

**SmartView - Future Release TBC**

SmartView integration with EvacU<sup>Elite</sup> will be released in future stages coming soon

Provides a Graphical building monitoring and user control interface platform which is tailored to deliver site specific FDAS, EWCIE and EICIE application requirements.

Speak to your local Ampac representative to help specify an appropriate scope for your project.

## 8 Applicable Standards

The EWCIE and EICIE systems shall comply with the current requirements involving the following:

- AS1670.1 and AS1670.4 Fire Detection, Warning, Control and Intercom Systems – System Design, Installation and Commissioning
- AS4428 Part 16 Emergency Warning Control and indicating Equipment EWCIE Grade 1
- AS4428 Part 4 Emergency Intercom Control and indicating Equipment EICIE
- AS7240 Part 4 Power Supply Equipment,
- IEC62368-1 Audio Video information and communication technology equipment-
  - Part 1 Safety Requirements
- AS/NZS 60950-1 Information Technology equipment Safety,
  - Part 1 General Requirements
- AS ISO 7240.23 Visual Alarm Devices (VADs)
- AS ISO 7240.24 Speakers for fire and evacuation announcements in buildings.
- AS1851 Maintenance of Fire Protection Equipment
- AS3000 Electrical Installations
- NCC National Construction Code of Australia
- All relevant local authorities having jurisdiction (AHJs)

A Certificate of Compliance for the EWCIE and EICIE system from an approved certifying authority shall be submitted upon request.

## 9 Control and Indicating Equipment (EWCIE and EICIE)

### 9.1 General

The Ampac EvacU<sup>Elite</sup> forms the central processing unit and CIE of the EWIS, receiving and analysing inputs signals from the fire detection system and providing visual and audible feedback to the user via the user interface and initiating automatic configurable alarm response strategies based on the building characteristics.

The Ampac EvacU<sup>Elite</sup> shall support a **four-tiered Access Level** password system to prevent unauthorised access in accordance with AS4428.16 and AS4428.4.

The CIE shall be modular in construction and allow 10% extra space and load provisions for future expansion of the system.

The EWCIE EWS zones shall be easily configurable to the applicable fire detection zones.

The EDS output mapping shall trigger the EWCIE building evacuation sequence requirements of both the building and the overall site (where applicable).

The EWCIE shall incorporate a real time clock which enables events to be time and date stamped. Events shall be viewable within the system Event log. Up to 2700 historical event logs shall be captured.

It shall be possible for a site technician to perform configuration and operating program updates on site by connecting a laptop computer to the Ampac EvacU<sup>Elite</sup>.

The Ampac FireFinder<sup>PLUS</sup> CIE and the Ampac EvacU<sup>Elite</sup> shall support a high-level interface.

The interface shall be monitored.

The EWCIE shall provide audible sound as per AS4428.16 section 7.6 and indication as per section 7.2 to warn of the presence of incoming alarm signals.

An Alert Signal shall be provided in accordance with AS4428.16 section 7.3 when floor wardens form part of the Emergency response plans.

The EWCIE shall provide facilities to introduce a delay (after the processing of an alarm signal) for each emergency warning zone before entering the Emergency warning condition as per AS4428.16 section 7.7.

Multizone EWCIE shall provide configurable facilities to introduce the Emergency warning signals in a pre-configured sequence as per AS4428.16 section 7.8.

Silencing of the Emergency warning signals with a manual control shall be provided as per AS4428.16 section 7.9.2.

Each Emergency Zone shall have a facility to disable and re enable by a manual operation at access level 2 as per AS4428.16 sections 9.1 to 9.4.

The EWCIE shall have facilities for testing the processing and indication of alarm input signals and manual controls for the corresponding emergency zone(s) as per AS4428.16 section 10.1 to 10.4.

Individual Manual controls for each Emergency zone shall be provided as per AS4428.16 sections 12.1 to 12.3 at access level 2.

## 9.2 Mechanical Design

The housing for the Ampac Evacu<sup>Elite</sup> shall be floor or wall mounting, with an internal hinged frame for the inner door. All equipment shall be of a modular plug-in design, with the field terminations and power supply accessible by opening the inner door.

The housing shall be of metal construction of at least 1.5mm steel.

The housing shall be powder coated in Surfmist. Other colours shall be available on request.

The Housing shall be available in two sizes or multiples thereof.

- 24U Cabinet Dimensions = 1800H x 650W x 380D
- 13U Cabinet Dimensions = 900Hx 650W x 380D

IP rating of the housing shall be IP30.

It shall not be possible to open the outer door of the housing without the use of a 003 key.

## 9.3 System Networking (When required)

When a networked system is offered, the tenderer shall provide a basic schematic of the panels involved outlining the contents and controls contained within each. It shall also detail the network cabling type fitted between each node and detail FACPs HLIs / MECP SECP DGP or local control panels so there is a clear understandable network plan overview.

The system shall be capable of being arranged to function stand alone, networked or a distributed configuration.

It shall be possible to network Ampac Evacu<sup>Elite</sup> panels together, forming a distributed system that shall be capable of supporting:

- 64 Panel Nodes
- 512 Emergency Warning zones
- 1024 Emergency Intercommunication zones

In a distributed system each networked CIE shall hold the system configuration file allowing each individual CIE to automatically control and indicate its local outputs based upon the condition of inputs into the system.

Each panel node shall have the option of not requiring any front panel controls and indicators (referred to as a DGP) These can be installed in strategic locations to reduce the system cabling costs and reduce cable tray congestion close to the MECP and MFIP

The network architecture shall be:

- Peer to peer
- Self-learning
- Redundant
- Self-healing
- Fault tolerant

The configuration tool used for programming the system shall pass the system configuration files onto all networked CIEs utilising the network infrastructure.

The EWCIE and EICIE network shall incorporate SFP transceiver connection technologies and/or Ethernet. This facilitates various distance and technology capabilities between the respective panel nodes.

Fibre Optic cabling shall be directly connected into the Network interface card via the appropriate SFP module type. Copper VDSL Comms / Ethernet or Fibre optic can form the cabling backbone infrastructure between the various nodes.

Each networked EWCIE and EICIE shall be configurable as:

- Global, meaning the CIE can monitor and control all devices connected to all EWCIEs and EICIEs throughout the network.
- Local, meaning the CIE can monitor and control all locally connected EW and EI devices.
- Partial, meaning the CIE can monitor and control some EW and EI zones on selected CIEs.

## Field Devices

### 9.4 General Requirements

The EWCIE and EICIE system shall support a wide range of approved field devices to meet the needs of the site application in terms of sound coverage and general installation environment.

- Speakers shall meet AS ISO 7240.24
- VADs shall meet AS ISO 7240.23

### 9.5 Warden Handsets and Emergency Alarm Initiating Device (EAID)

Warden Intercom Point Handsets shall meet AS4428.4 plus AS7240.17 where applicable

- Radial Type – Ampac Item No ASS63WIPS
- Loop Type - Ampac Item No ASS63LWIPS
- Emergency White EAID / MCPs) Ampac Item No 4105-1018

### 9.6 Speaker Models

The Ampac Speaker range is listed in the table below:

Description
Ceiling Speaker 4" 5W White
Ceiling Speaker 4" 5W Black
Ceiling Speaker 4" 5W White Low Profile / Grommets
Ceiling Speaker 4" 5W Black Low Profile /Grommets
Ceiling Speaker 4" 5W White Low Profile Aluminium Grill / Grommets
Ceiling Speaker 4" 5W Black Low Profile Aluminium Grill / Grommets
Grey 10W Horn Speaker
Black 10W Horn Speaker
Red 10W Horn Speaker
White 10W Horn Speaker
Surface Mount Speaker 4" 5W White
Surface Mount Speaker 4" 5W Black
Surface Mount Speaker 8" 15W White
Surface Mount Speaker 8" 15W Black
Ceiling Speaker 8" 15W Low Profile White
Ceiling Speaker 8" 15W Low Profile Black

## 9.7 Visual Alarm Devices (VADs)

VADs are used to alert building occupants of a fire alarm. The FDAS or EWCIE outputs are typically used to drive VADs. The Ampac VAD range is listed in the table below:

### Ceiling Mount VADs:

Description
VXB-VC Ceiling Mount White Flash Shallow White Body
VXB-VC Ceiling Mount White Flash Deep White Body
VXB-VC Ceiling Mount Red Flash Shallow White Body
VXB-VC Ceiling Mount Red Flash Deep White Body
VXB-VC Ceiling Mount Red Flash Shallow Red Body
VXB-VC Ceiling Mount Red Flash Deep Red Body
VXB-VC Ceiling Mount White Flash Shallow Red Body
VXB-VC Ceiling Mount White Flash Deep Red Body
VXB-VC Ceiling Mount Amber Flash Shallow White Body
VXB-VC Ceiling Mount Amber Flash Deep White Body

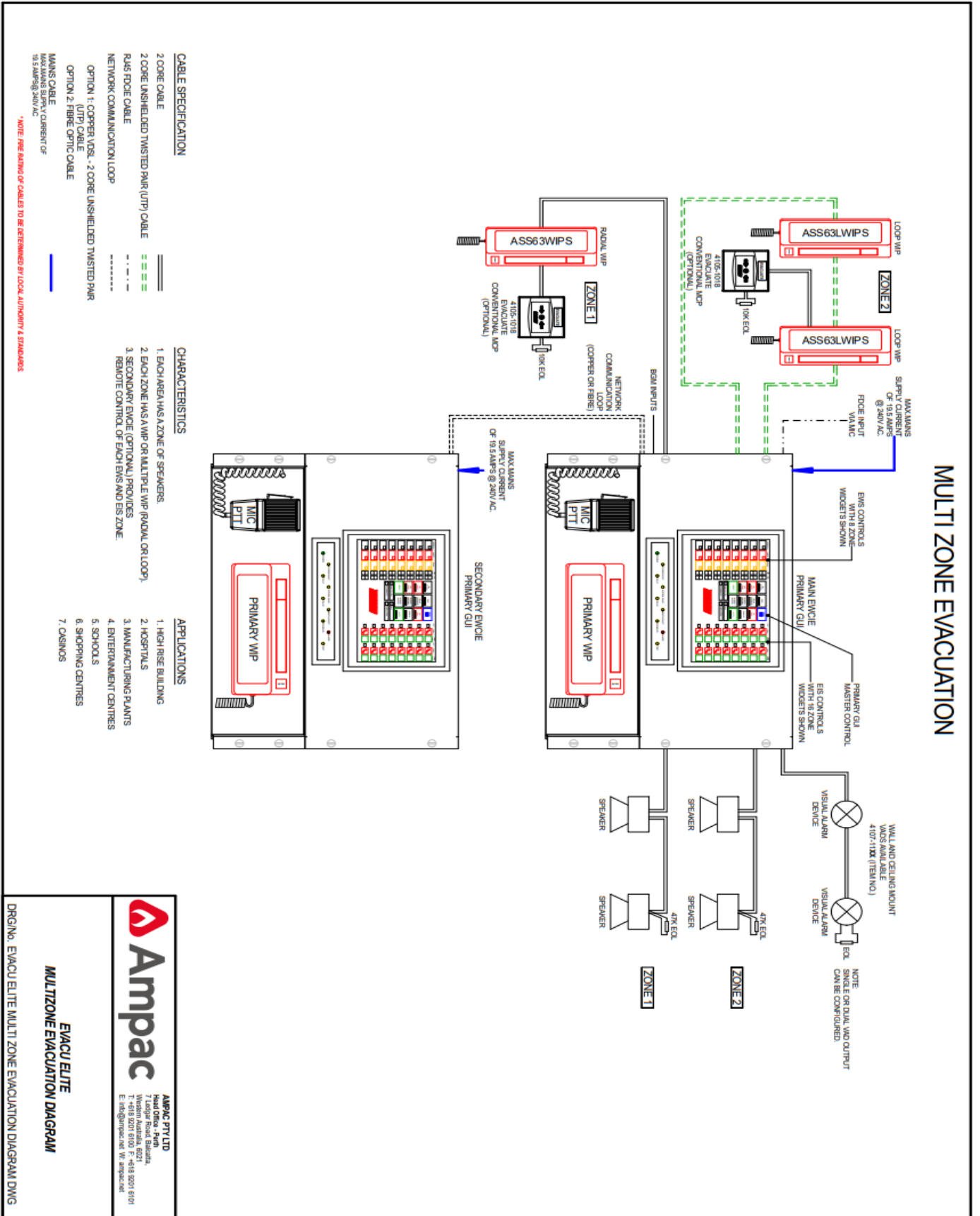
### Wall Mount VADs:

Description
VXB-VW Wall Mount White Flash Shallow White Body
VXB-VW Wall Mount White Flash Deep White Body
VXB-VW Wall Mount Red Flash Shallow White Body
VXB-VW Wall Mount Red Flash Deep White Body
VXB-VW Wall Mount Red Flash Shallow Red Body
VXB-VW Wall Mount Red Flash Deep Red Body
VXB-VW Wall Mount White Flash Shallow Red Body
VXB-VW Wall Mount White Flash Deep Red Body
VXB-VW Wall Mount Amber Flash Shallow White Body
VXB-VW Wall Mount Amber Flash Deep White Body

### Dual Ceiling Mount Strobes:

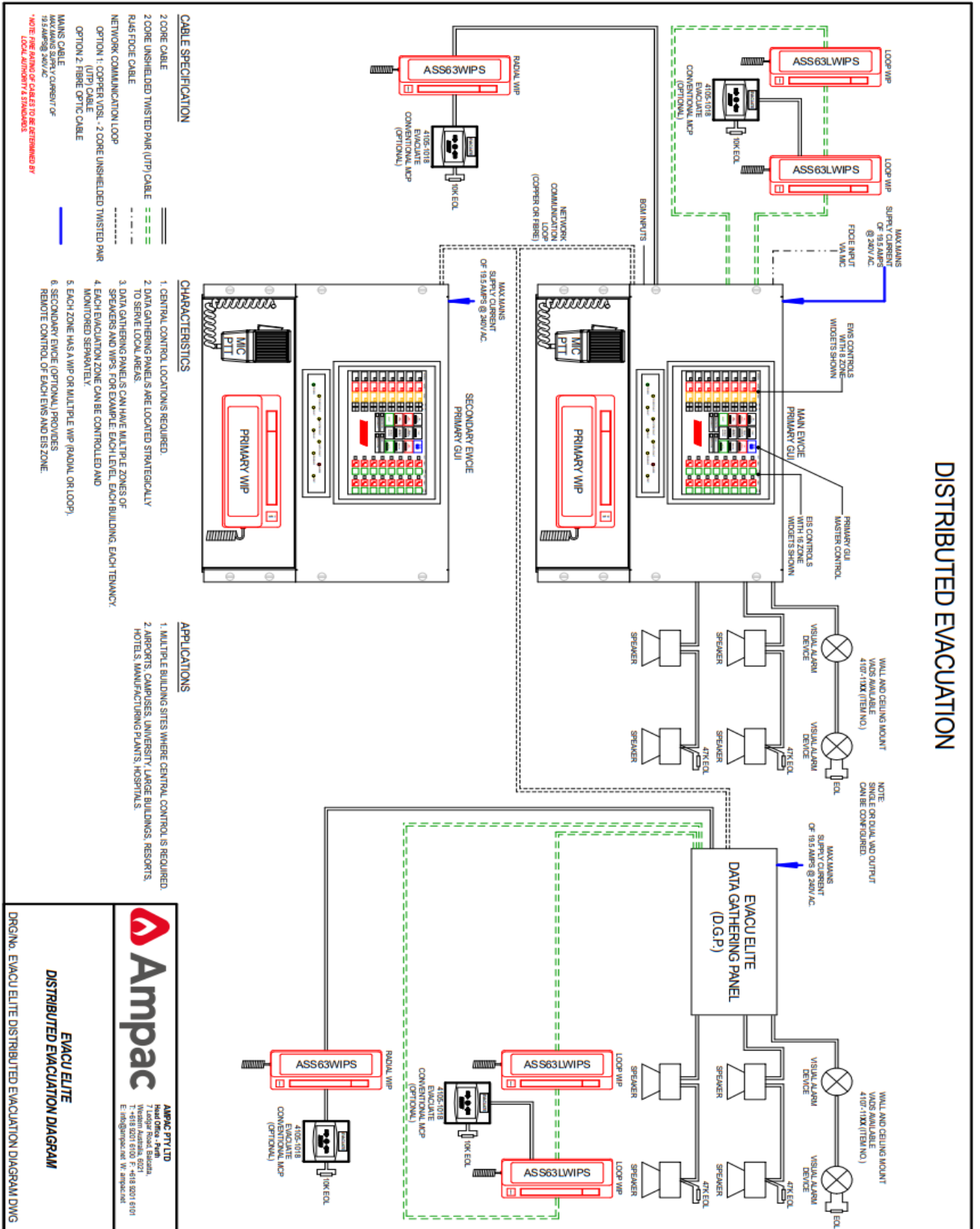
Description
Dual VXB Ceiling Mount Red and White Flash Shallow White Body
Dual VXB Ceiling Mount Red and White Flash Deep White Body
Dual VXB Ceiling Mount Red and Amber Flash Shallow White Body
Dual VXB Ceiling Mount Red and Amber Flash Deep White Body

## 10 Multi-Zone System with SECP (For Illustration Purposes)





## 11 Distributed Multi-Zone (For Illustration Purposes)



**UNCONTROLLED DOCUMENT**

*NOTE: Due to Ampac's commitment to continuous improvement specifications may change without notice.*