



0001c Design Checklist - Special Electrical Systems

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00 Design principles

0.01 Main Considerations

It is a requirement to undertake the [00 PLANNING AND DESIGN/ 0001R - DESIGN REFERENCE](#) and [GLOSSARY OF TERMS](#) information into all aspects of design, detailing and delivery when developing the content here within. Clear demonstration of adherence to these requirements is part of the services and will be called upon at key points in the project and during at the discretion of the Department of Education (DoE).

Introduction

Within each project there is a variety of additional equipment and systems that will be required. The number and type of additional equipment and systems will vary from project to project.

This section sets out the details and characteristics of the additional equipment and systems to be used where nominated and selected by the department and the project control group.

All systems when installed are to at least meet the relevant legislative requirements, including the National Construction Code and the relevant Australian Standards.

The requirements for the systems listed within this section are also to be complied with and may exceed the minimum requirements of the regulations.

0.02 Energy Conservation

Generally, the design of all special electrical systems and associated components should be undertaken on a 'Whole of Life' basis.

When assessing the relative merits of the various systems any financial calculations should consider the following:

- Capital cost
- Capital cost of any supporting/ enclosing structure (plant rooms/ platforms) and/ or servicing equipment (eg access ladders etc).
- Multi-service integration and interface - provision (and costs) of any supporting services (eg power etc).
- Reticulation of cables and conduits, if applicable

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- Resource (power etc) consumption costs. Based on; 1 year, 5 years, 10 years and / or 20 years
 - Maintenance required and cost of this maintenance
 - Frequency, nature and costs of capital upgrades needed over the life of the asset to maintain fit for purpose
 - Cost of disposing of the asset or its components

Consideration of the following should also be considered:

- Potential for future improvements and updates. Flexibility and change
- Value for money from any chosen material, equipment or product
- Life span of the asset
- Accessibility for servicing

Designers and contractors must design and construct all school buildings within the parameters specified in the:

- Building Code of Australia (BCA) Section J for Energy Efficiency.

This Design Guide details the current policy direction.

The EFSG refines these requirements for each space.

Produce a Building User's Guide to enable the client to understand the building systems and operate systems to maximise efficiency. This must:

- Clearly and concisely describe the operation of building and its services
- Detail a reasonable maintenance program
- Advise the user of the most suitable replacements for consumables

0.03 Automatic Lighting Control

Lighting Control in Schools

Achieve energy efficient switching in Schools by:

- The use of multiple switching groups
- Automatic control of these groups.

In Secondary Schools, provide automatic control in all habitable spaces except:

- Staff Studies
- Gymnasium
- Movement Studio

-
- Administration Offices
 - Materials Technology spaces
 - Plant rooms and Switchrooms
 - Store rooms

In Primary Schools, the automatically controlled areas are:

- Home bases
- Practical activities areas
- Library main reading area

Existing Secondary Schools

- Use electronic time delay switches to replace the existing light switches.

Each switch must have:

- Dual contacts rated at 12.5 amps minimum each
- A time duration of 0-2 hours
- One connected to a group of luminaires near a window, to turn off lights 10 minutes before the end of the selected period
- The other to turn off lights at the end of the selected period and control all other luminaires

Primary and new Secondary Schools

Install a system linked to the period-bell-alarm timer to control luminaires in the appropriate rooms. Use separate dedicated cabling for transmission of signals.

The automatic switching is to operate as follows:

- Controlled luminaires are to automatically turn-off nominally 3 minutes after the bell sounds. Turn-off is to be in two steps other than in small rooms, one step after 3 minutes and the second group 2 minutes later (5 min).
- If the lighting is required for the next period, occupants of that room can prevent the lights turning off by pressing the ON switch/es after the bell sounds.
- The luminaires in each room can be turned off at any time by pressing the OFF switch/es.
- The off signal is to be capable of transmission at the end of normal school hours or at other selected times without the bells sounding, with the lighting turning off in two steps (other than in small rooms).

Achieving Period-Bell-Linked Control

By separating the lighting circuits from power circuits on the EDB, and using contactors to control the lighting circuits, a signal transmitted from the period bell control to the appropriate distributionboards will be able to control the lighting. This transmission can either be electronic or via hard wiring, with possible sharing of the period bell control cabling.

Method(s) of Operation

Hard-wired Option

- Use contactors and time delay relays to achieve the required mode of operation
- Signals to be carried in a multi-core sheathed control cable run with the submains

Logic Control Option

Use dedicated cables to carry signals, which may be high frequency to equipment at the switchboards. The following restrictions must be satisfied:

- Injected signal must not operate on the mains.
- No radio-frequency interference.
- Meet requirements of all relevant statutory bodies.
- Cabling to be multi-core sheathed control cable run with the submains or alternatively a segregated control cable.
- Provide full training and manuals.

Basic Building Automation System Option

- Basic building management systems are to be investigated to determine the appropriate system for the individual project.
- The systems should also provide the opportunity for future expansion to control other equipment (eg mechanical services) to initiate energy efficiencies and integrate access lighting with security control.

The following criteria must be satisfied:

- The systems must be programmed for the specific application and be simple for school staff to update period bell times.
- Switches will be in student access areas and therefore must be durable and robust as required for other switches and socket outlets as described in the Design Guide.
- Programming and commissioning to be by a vendor-certified systems integrator.

-
- All equipment necessary to operate and maintain the system must be provided, along with full training and manuals.

Common Requirements

- Provide a 0-3 minute adjustable timer/timing to achieve a delay between operation of the period bells and transmission of the off signals.
- Provide automatic pulses during the night.
- Allow for easy override of the system by the user.
- Provide advisory and operating instructions in each controlled room by engraved plastic labels. Approximately ten words per label is the minimum acceptable.
- Maintain at least two switching groups except in very small rooms with a time delay between one group and the other.
- Relays and other control equipment must be installed only in the main switchboard and distribution boards, or in separate enclosures equal in construction to the switchboards and located in switchrooms or switchboard cupboards

The requirements for the lighting controls and labelling are contained in the lighting section of the Design Guide.

0.04 Demountable Buildings - Design Procedure

Demountable, portable or transportable buildings are often installed to provide extra accommodation. The site services must cater for this.

Calculate the spare capacity required for the additional buildings on any particular project and incorporate this into the installation.

0.05 Computer Learning Facilities

Provide electrical services for computer facilities.

Provide the services to meet the basic requirements of portable “stand-alone” computers and/or a small network computer system without being unduly complex or expensive.

Heating/Cooling

- A Heating strategy and a Cooling strategy are to be developed for each project

Refer to [00 PLANNING AND DESIGN/ 0001c DESIGN CHECKLIST – MECHANICAL](#) and [00 PLANNING AND DESIGN/ 0001c DESIGN CHECKLIST – SUSTAINABILITY](#)

-
- Liaise with the Mechanical Services designer and provide supply to any heating or cooling equipment requested by the Client.

Lighting

- Provide a lighting levels as per AS 1680.
- Provide glare control to lighting within workstation areas.
- Orientate the luminaires to reduce glare in VDU screens and white marker boards.

Power

- Reticulate power cabling via the lower channel of a two-channel or three-channel wall-mounted duct system with conduit interconnections between rooms.
- Provide the necessary power circuits per wall, with cabling entering the duct from the rear (one entry per wall- four in all via concealed conduit and wall box. Each circuit requires individual RCD and surge protection.
- For control of power supply and number of outlets within the computer learning space:

Refer to the individual Rooms and Spaces Technical Data Table for data requirements.

- Use 25mm conduit (except lighting).
- Wall-ducts to be as noted in DUCTS in the COMMUNICATIONS section of this Design Guide.
- Ducts and covers to be noted in DUCTS in the COMMUNICATIONS section of this Design Guide. Top of duct is to be 1m above F.F.L. along three (student) walls, and skirting level along the teacher's wall.

Communications

Use the upper channel for Structured Cabling System (SCS) network cabling back to the CD or BDs.

Telephone

- Provide a double Telephone Outlet (TO) to enable future installation of a modem and/or landline between the school and other centres.
- All wiring connected to the public-switched network either directly, via patching to the SCS or through a modem must comply with Australian Communications Authority (ACA) requirements.

Power Conduits (25mm)

- One to each student wall duct from EDB.

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- From teachers skirting duct to wall duct at rear of room.

Communications Conduits (25mm)

- From teachers duct to each student duct (total 3)
- From teachers duct to video monitor
- In resources' room, from wall duct to skirting duct
- From teachers duct to BD (min. 3 conduits.)

0.06 Upgrading Existing Halls

Where modifications and upgrade works are to be undertaken to existing halls, the works are to comply with the requirements of the BCA.

In particular, adhere to the following priorities to ensure the safety of students, staff and visitors:

High Priority

- Exit and Emergency lighting – place emphasis on outward swinging exit doors
- Exit paths upgrade to Compliance with BCA General lighting override (panic lighting)
- Authorised access only to light switches
- Aisle/Step lighting (if applicable)
- Disconnection of unsafe equipment
- Replacement of essential items eg. switchboard, separate neutral to patch panel

Medium Priority

- Upgrading of general lighting
- Switches to operate from main entrance and stage
- Upgrading of power; provision for stage lighting

Low Priority

- Distribution board located near main entrance
- Audio loops for hearing augmentation

Consult the Project Manager when building alterations are required. For instance, relocation of the switchboard may be more acceptable if the switchboard itself needs upgrading or replacement.

Obtain approval from the Project Manager before upgrading sound reinforcing equipment and stage lighting equipment that is in poor condition.

0.07 Access Toilet or Access Shower/Toilet and Change Area

Toilet facilities for disabled persons are provided in the form of Access Toilet or Access Shower/Toilet. The Access Shower/Toilet has a hand-held shower and consequently must be considered a damp situation.

- Provide infrared heating lamp or lamps controlled by a 30 minute push-on/off time switch.
- Mount heating lamp/s no lower than 2.5m above finished floor level.
- Use only minimum IP35 rated switch to satisfy damp situation restrictions.
- Locate the timer mechanism in the local distribution board.
- Installed luminaires must be minimum IP56 protected and arranged so that lamp replacement access requires a tool i.e. Vandal-resistant contract fitting type.
- Control the luminaire and the mechanical exhaust system by an occupant presence and or motion detector set to turn on when the room is entered and turn off four minutes after the room is vacated.
- Comply fully with AS/NZS 3000.
- Install an alarm system complying with the requirements of DG / Special Electrical Systems.

0.08 Electronic Surveillance

Obtain advice for the particular school from DoE School Security Unit (SSU) early in the design phase. In general, there are three (3) options:

Commercial Electronic Security System

- The installation of a commercial security system as part of the construction work is often considered for new schools and schools with new buildings and refurbishment to existing buildings. DoE SSU may elect to install a commercial system to the new buildings and retain the proprietary system in the existing buildings, if applicable.

Proprietary Electronic Security System

- Existing schools that have had electronic security fitted for several years have what is referred to as a proprietary system. Proprietary systems are no longer being installed.

Separate Installation by DoE SSU

- Provide conduits or ducts between all electrical distribution boards for the installation of a future security system in new or upgraded buildings.

DoE School Security Unit (SSU) Contact Details

Contact your DoE project team for contact details of the assigned Security Unit personnel for your relevant project.

Process

The process to be followed is:

Electrical Site Investigation Phase:

To ensure the project budget includes appropriate allowance for the electronic security works:

- In an existing school, conduct a site investigation and identify the type of security systems (if any) that are installed.
- Advise SSU of the extent of the proposed works (number of new buildings and approximate floor areas).
- Request advice if a security system is to be installed or extended, or if conduits only are to be provided, for future installation.
- Obtain approximate allowances from SSU.
- Include the budget estimate in the external electrical works budget.

Electrical Design Phase:

To include the electronic security works as part of the electrical services trade:

- Provide SSU with drawings in CAD format showing plans and typical section/s of new and altered buildings.
- Request the provision of details and plans of the security services and of the estimate contract value.
- Allow within the project programme at least 30 working days for SSU to review information and prepare their design.

If SSU advises a security system is to be installed or extended:

-
- Review the specification and schedules received from SSU to ensure there are no terms or requirements included that are at variance to building project contract documents.
 - Prepare amended sections where necessary in consultation with SSU.
 - Include the cost of security services in the pre-tender budget.

Security Services Documentation

If a security system is to be installed or extended, include within the tender documents:

- All security services plans, schedules and forms provided by SSU and amended sections prepared in consultation with SSU.
- If necessary, include text within the project specification to replace that found to be in conflict with the contract conditions.
- Reference the material supplied by SSU that is being included.
- Specifically note necessary conditions that are additional to those covered in the building contract conditions, including: using prequalified installers, security system monitoring, documentation.
- Include the DoE SSU standard specification applicable to the installation at that time.
- Provide dedicated reticulation system for security system as per DoE SSU specifications.

Contractor's Obligations

Tenderers/contractors must:

- Obtain quotations from security firms that are PRE-QUALIFIED with DoE SSU.
- Include any on-cost, cabling and installation cost on the tender price.
- Install the security services in compliance with the project specification.
- Prepare as-installed drawings, schedules, compliance certificate and manuals as per DoE SSU specifications
- Commission the system in conjunction with DoE SSU.
- Train staff in the operation of the system.
- Provide monitoring and operational maintenance for a 12-month period after completion.
- Ensure electronic surveillance system does not have any additional equipment connected other than that specified in SSU documentation.

0.09 Skirting and Wall Mounted Duct

- Specify duct that is neat in appearance, sufficiently robust for the application and which requires tools to remove or slide covers.
- Ducts to be either three-channel with the centre channel used for accessories, or two-channel with a system of insulated enclosures within one channel for mounting accessories.
- Ensure that the channels for both power and voice/data are of adequate size. In both cases size the channels or include additional feeds to achieve minimum installed cables plus 100% space.
- Select and install ducts so that voice/data cabling can be laid-in and minimum bending radius limits complied with.
- Do not install short lengths of duct - run the duct along the full wall lengths or between wall and door opening.
- Colours will be selected from the colour schedules specific to a project and more than a single colour may be required in a school, although generally skirting duct will be black.

0.10 CCTV Installations

CCTV systems are required in several locations where indicated in the Rooms and Spaces Technical Data table, including:

- Secondary clinic
- Primary sick bay
- Library

Provide IP based camera system as per security requirements.

The monitor shall be:

- Minimum 350mm colour monitor
- Minimum resolution: 500 lines
- Mounted at 2,200mm in an adjustable mounting frame designed and installed for the size and weight of the monitor
- Supplied from a socket outlet adjacent to the monitor, controlled from a switch directly below the monitor at 1,200mm
- No audio facility is required

Wiring between the camera and monitor shall be by 1x75 ohm coaxial cable or data cabling for IP system run in conduit for its full run.

0.11 Sound Reinforcement System (SRS)

Provide sound reinforcement equipment, when indicated in the Rooms and Spaces Technical Data table and generally in:

- Gymnasiums
- Communal Spaces
- Movement Studio
- Portable System in some Primary Schools

The equipment is used to amplify sound for a wide range of activities eg:

- Speeches for assemblies and meetings
- Debates
- Drama
- Musicals
- Recorded music for dance and PE classes

Note: Consult DoE regarding equipment selection where a Gymnasium is designed to also serve the Community.

SRS Equipment

The SRS equipment consists of:

- Stereo/mono (switchable) amplifier (150W in Secondary, 100W in Movement Studio, 100W in Primary).
- Speaker boxes (two off 175W each in Secondary, four off 125W each in Movement Studio, two off 125W each in Primary) with wire guards.
- Compact Disk CD/DVD Player / CD changer
- Provide inputs to support various audio formats such as MP3, iPod, etc.
- Audio mixer.
- Microphones and stands.
- Plug-in points for microphones and speakers.
- Equipment rack.

SRS Equipment Enclosure

- Supply the mixer, amplifier, CD/DVD player/CD changer and monitor panel in a metal rack designed for wall mounting in a lockable enclosure provided by the builder.
- Originate conduits for wiring of microphone and speaker outlets in a flush wall box mounted behind the equipment rack with wiring terminated on a terminal strip within the rack.
- Provide power supply to the equipment by a double socket outlet mounted behind the rack, controlled by a labelled isolating switch mounted adjacent the rack. Place the socket outlet on a separate RCD protected circuit.
- Provide one SRS in the control room attached to the Movement Studio.
- Wiring access is to be provided from the Control Room to a location in the body of the Gymnasium for the future connection of a remote mixing desk to the system. Minimum provision should be 32mm conduit, but accessible ducting is preferable.
- To limit electrical interference, separate SRS equipment and wiring from equipment and wiring associated with lighting control.

SRS Outlets

Internal Outlets

- Connect microphone and speaker outlets direct to the SRS equipment enclosure junction box with 20mm conduit.
- Mount stage microphone outlets along the front of the stage.
- Mount speaker outlets at minimum heights of 3000mm in Communal Spaces and 5000mm in Gymnasiums.

Position speaker outlets each side forward of stage to minimise feedback

Cabling of SRS

- Wire speaker outlets using two 2.5 mm² TPI cables.
- Microphone cabling must be high quality 19/0.2 PVC insulated and screened with outlets of the 3 pin female XLR type.
- An experienced technician must carry out terminations of cabling.

External SRS

In Primary Schools, provide external microphone and speaker outlets for the external assembly area if it is immediately adjacent to the Communal Space.

Enclose the external microphone outlet in a lockable weatherproof enclosure. Mount the weatherproof horn speaker(s) in positions that minimise the possibility of vandalism and provide coverage of the assembly area.

Provide in the SRS equipment cupboard a labelled switch (or switches) for speaker selection with positions for “inside speakers”, “outside speakers” and “all speakers”.

Alternatively, provide a portable SRS from Government Contract.

The sound system must be portable and ready for operation from mains power. In general, the system must have:

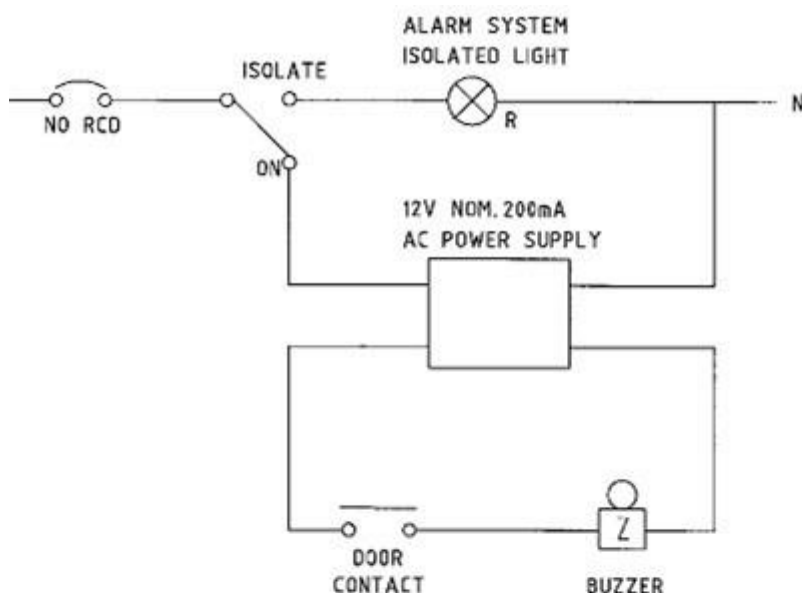
- One microphone outlet
- One auxiliary outlet
- Two speaker outlets
- Two separate speakers

0.12 Alarm Systems

Library

- Install an alarm system on all subsidiary exit doors in both Primary and Secondary Schools Libraries.
- Fit the alarm system with muting and isolating system.
- A red light mounted in the same flush plate as the isolate/on switch is to be engraved “ALARM SYSTEM ISOLATED “. This switch is to be a two-position switch with indication of “ALARM ON” and “ALARM ISOLATED” engraved on the flush plate.

Figure 01: School Library Alarm System



NOTES:

1 DOOR CONTACTS:

RECESSED MOUNTED REED SWITCH MOUNTED AT THE TOP POST ON THE LOCK SIDE OF THE DOOR.

2 BUZZER:

PIEZO-ELECTRIC "CHIRP" BUZZER SCREW FIXED TO THE COVER PLATE OF A TRIPPLE GANG WALL BOX MOUNTED 2000 ABOVE FINISHED FLOOR LEVEL IN THE LIBERIAN'S OFFICE.

3 ALARM SYSTEM ISOLATED LIGHT:

APPROVED INCANDESCENT BEZEL WITH RED LENS MOUNTED IN THE SAME WALL BOX AS THE ISOLATE/ON SWITCH. LIGHT FLUSH PLATE IS TO BE ENGRAVED "ALARM ISOLATED: IN 6mm RED IN-FILLED LETTERING.

4 POWER SUPPLY:

12V, NOMINAL 200mA, AC WITH OVERLOAD AND SHORT CIRCUIT PROTECTION (FIXED IN THE BUZZER WALL BOX).

5 ISOLATE/ON SWITCH:

SPOT ROTARY SWITCH TO BE MOUNTED AT 1500 ABOVE FINISHED FLOOR LEVEL BELOW THE BUZZER WALL BOX. SWITCH FLUSH PLATE IS TO BE ENGRAVED "ALARM ISOLATED" AND "ALARM ON" TO INDICATE THE SWITCH POSITIONS IN 6mm RED IN-FILLED LETTERING.

Sick Bay, Clinic, Access Toilet and Access Shower/Toilet

An alarm call system is to be installed in:

Primary Schools

- Sick Bay
- Access Shower/Toilet

Secondary Schools

- Boys' & Girls' Clinics
- Access Shower/Toilet

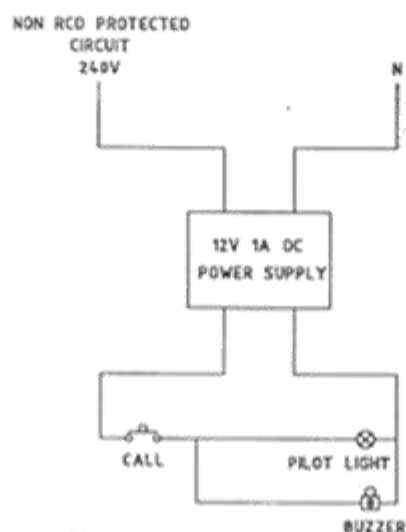
Alarm System in Sick Bay/Clinic

- Use a red neon pilot light and a piezo-electric "chirp" buzzer mounted at 2000 AFFL in the Clerical Office.
- Engrave the flush plate "SICK BAY" or "CLINIC" as required.
- Use a high impact IP56 rated latching call button with manual release wall mounted at 1000 AFFL and engraved "CALL".
- The system must have a 12V 1A DC power supply with overload and short circuit protection

Alarm System in Access Shower/Toilet (Additional Requirements)

- Alarm System is to be in accordance with AS1428.2 detail requirements.
- Use an intermittent type piezo-electric buzzer mounted above the toilet door.
- Engrave "ALARM" in 10mm letters and "HELP REQUIRED INSIDE" underneath in 8mm letters on the flush plate.
- Use a high impact IP56 rated latching call button with manual release wall mounted at 650 AFFL and engraved "CALL".
- The system must have a 12V 1A DC power supply with overload and short circuit protection.
- In addition to the clerical buzzer and local buzzer located externally above the access toilet/ shower door also provide a buzzer within Communal Hall, Gymnasium and movement studio.

Figure 02: Sick Bay Clinic and Access Toilet Call System



NOTES:

- 1 CALL BUTTON: RED MUSHROOM HEAD, HIGH IMPACT, IP56, LATCHING, MANUAL RELEASE, LOCATED 1000 ABOVE FINISHED FLOOR LEVEL (850 AFFL IN ACCESS TOILET/SHOWER) AS INDICATED ON PLANS. SWITCHPLATE TO BE ENGRAVED "CALL" IN MINIMUM 5mm RED INFILLED LETTERS. BOYS AND GIRLS CLINIC BUTTONS TO BE IN PARALLEL.
- 2 POWER SUPPLY: 12V 1A DC WITH OVERLOAD AND SHORT CIRCUIT PROTECTION.
- 3 CLERICAL OFFICE BUZZER: PIEZO-ELECTRIC 'CHIRP' BUZZER.
- 4 PILOT LIGHT: RED NEON.
- 5 CLERICAL OFFICE PANEL: MOUNT THE BUZZER AND PILOT LIGHT PAIRS IN A PANEL AT 2000 AFFL. ENGRAVE THE PAIRS AS "SICK BAY", "CLINIC", ETC IN 10mm HIGH RED FILLED LETTERING.
- 6 ACCESS SHOWER AND TOILET: IN ADDITION TO THE CLERICAL PANEL PROVIDE A LOCAL BUZZER EXTERNALLY ABOVE THE ACCESS TOILET/SHOWER DOOR. SCREW FIX A 2900Hz INTERMITTENT BUZZER TO THE COVER OF A DEEP WALL BOX. PROVIDE A LABEL WITH "ALARM" IN 10mm LETTERS AND "HELP REQUIRED INSIDE" IN 8mm LETTERS IN WHITE LETTERING ON A RED BACKGROUND.

0.13 Thermal/Smoke Detectors

Depending upon the characteristics of the particular project a smoke detection and alarm system may be required by the BCA or as directed by the Project Manager.

Thermal/smoke detectors are required in:

- Areas of schools such as dormitory accommodation, etc where it is a BCA requirement.
- These installations must comply with AS 1670 and the BCA.

0.14 Hearing Augmentation System

Provide hearing augmentation systems to assist students and people who are deaf or hard of hearing to hear music and speech. Students and adults use hearing devices which utilise different technology and are supported by different hearing augmentation systems. It is acknowledged that no one system will suit all users, therefore in some areas the EFSG requires that there be provision of multiple hearing augmentation systems:

1. **Induction loop** system to support devices used by adults including teachers, other staff, parents, family and other adult community user groups, and
2. **Digital Soundfield System** which is compatible with the personal Wireless Communication Systems issued to children under 25 by Hearing Australia which couples with each student's hearing aid or cochlear implant.

Location

The following areas require **both** an Induction Loop and a Digital Soundfield system:

- Hall
- Library
- Movement Studios
- Public reception
- One interview room in administration areas
- Any other school areas which have an inbuilt amplification system

The induction loop system must:

- Consist of a suitable cable, amplifiers and any necessary transducers
- Be interfaced to the main sound reinforcing system
- The cable is to be laid in conduit, either in the ground floor slab if the reinforcing permits, or else saddled on top of the slab
- Provide labels warning against nailing, drilling, etc.
- Do not install cable below the reinforcing
- Is to be equitably distributed to ensure uniform reception and to not less than 80% of the floor area

The wireless soundfield system must:

- Consist of soundfield speakers, wall pilot, and the range of portable devices including touch screen microphone, multimedia hub, charging rack and portable speaker

- Provide wall mounted soundfield speakers and supporting system devices in the Hall, Library and other large rooms. This system can be interfaced to the main sound amplification system.
- In General Learning Spaces (GLS) provide additional power outlets (min 2 additional double GPO's per GLS) to enable the range of portable soundfield devices to be located in that GLS when occupied by a student who is deaf or hard of hearing.
- Provide minimum one (1) set of soundfield portable devices to support a student who is deaf or hard of hearing. Advice should be sought from the school to confirm need for additional sets of soundfield portable devices.

Refer BCA Part D, Clause D3.7

Signage

- Provide the International Symbol for Deafness to indicate that an assistive hearing device / hearing augmentation system is installed.
- Refer AS 1428.1, part 14.3 & 16

Location of Signage

- At the main door or doors of the enclosed space
- Where the hearing augmentation does not cover the total area of the enclosed space, the signs shall designate the boundaries of the area served

0.15 Workstation Outlets

Provide power and voice/data outlets to all workstation type furniture.

Co-ordinate with the supplier of this furniture to ensure the electrical services allows full flexibility of use.

In general:

- Determine if the furniture will be designed for cabling to run through it, or if cable trays will be provided for loose wiring.
- Install two-channel ducting to provide both power and voice data to be available to all work stations.
- Co-ordinate skirting height, wall ducting and outlet locations with furniture design.
- Provide appropriate power circuits and socket outlets for connection to soft wiring systems, ensuring circuit loadings are not exceeded.
- Supply and install the soft wiring system.

-
- Install the voice/data cabling system to support the number of outlets to be provided either for or in the furniture.

0.16 Roof Ventilator Control

Provide controls for the operation of the motorised dampers on the roof ventilators. Generally, one switch is required for each space within the school where roof ventilators are installed. Coordinate with mechanical documentation.

The switch mechanism is to be rotary without a stop position with two ON positions for summer and winter.

In general: locate the switch with the lighting control switches for the particular space. The requirements for the switch panels and labelling are contained in DG / LIGHTING.

Ensure the wiring and socket outlet/plug top connection is not visible through natural-light strips.

0.17 Microwave Activated Urinal Flushing System

Refer to [08 HYDRAULICS/ 0811 SANITARY FIXTURES](#)