

general principles

7.0 Building Systems

Design Objectives

7.1 Climatic Control Ventilation

7.1.1 To provide mechanical services designed and installed in accordance with relevant Codes and Standards and provide internal climatic conditions that satisfy the requirements of Queensland Health

7.1.2 To provide adequate fresh filtered air and air movement

Design Guidelines

A registered professional engineer shall design the mechanical services and witness all relevant tests.

The mechanical contractor shall certify that the installation complies with the documentation and statutory requirements.

Air conditioning: In geographic locations where Queensland Health approves its installation, air conditioning shall be provided to the following areas;

- All administrative areas,
- Resident support areas,
- Bedrooms,
- Staff support areas including offices, resource rooms, serveries and clean utility room.

In addition, the provision of relief ventilation may be considered for kitchens and regions where high ambient temperatures may be encountered, as well as in areas where it may be operationally desirable; for example to the soiled linen store room (to control odours).

Air conditioning systems shall be designed for energy efficient operation. Systems shall be separated or zoned so that systems serving unoccupied areas, eg. Unoccupied rooms or administrative areas at night, may be shut down.

Life cycle costing analysis must be carried out to determine the type of air conditioning/heating system to be installed. This may include ducted or split system/ electric, gas or reverse cycle heating systems. Consider particularly the life of domestic split systems compared with ducted systems together with operating costs.

Air filters for all systems shall be extended surface deep bed filters.

Ensure the positive introduction of filtered fresh air to all air conditioning and heating systems.

general principles

Design Standards and Policies

7.1.1 Registered Mechanical Engineer, Queensland

Mechanical installation shall comply with Australian Standards, Building Code of Australia (BCA), and Queensland Health Capital Works Guidelines - Infection Control

Under normal circumstances, air conditioning systems shall be capable of maintaining internal temperatures at 24 deg C, +/- 1 deg C. However in regions where extremely high ambient temperatures are experienced, it may be more desirable to maintain internal temperatures some 7 to 10 degrees C below the outdoor temperature. Follow Workplace Health & Safety (WH&S) Advisory Standards where practicable.

Systems shall be designed to satisfy all relevant Q-Mech Standards, Australian Standards and Codes of Practice.

Air handling systems shall comply with the requirements of AS 1668 Part 1. Where systems fall outside the jurisdiction of this standard, all supply air systems, except for unitary equipment, shall automatically shut down on any fire alarm signal in the area served by that system.

7.1.2 Extended surface filters shall have a minimum 70% efficiency to No 4 Duct as specified in AS 1132

Air conditioning systems shall be designed to introduce out door air into all areas to satisfy the requirements of the BCA and AS 1668 Part 2.

Note:

The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

Design Diagrams



7.1.1

general principles

Design Objectives

7.1.2 To provide adequate fresh filtered air and air movement (cont.)

7.1.3 To locate plant and ensure adequate access for maintenance

7.1.4 To provide location of controls

Design Guidelines

Ensure adequate air movement to all areas without the introduction of drafts. Special attention is required relative to the location of air conditioning, indoor cooling units and supply air outlets.

Air movement within occupied spaces may be enhanced by the use of ceiling fans or wall mounted oscillating fans. This would be especially relevant between seasons and may prolong the periods when cooling is not required.

Consideration must be given in the design of systems to utilise full fresh air cycles to achieve operating economy between seasons or during evenings when cooling may not be required. Such provisions may assist in the control of odours by providing a purging effect.

Consideration should be given to maintenance provisions in regard to type of plant selected and where facility is located.

In order to facilitate maintenance access and limit noise emissions from air conditioning systems consider the use of ducted systems with air handling units located in plantrooms.

Where ducts are insulated, consider the selection and location of insulation. Special care should be taken to limit the possibility of fibre glass insulation particles entering resident areas.

Ducts should be concealed above ceilings or furred against ceilings/walls.

The location of services (predominantly in ceilings and plantrooms) should be coordinated to optimise the utilisation of available space and access for cleaning and maintenance.

All air conditioning plant controls shall be located in a secure area where only staff are able to access.

Residents must have the ability to control the operation of air conditioning/ventilation within their own bedrooms including the ability to switch off the air conditioning/vents serving that room without affecting other areas.

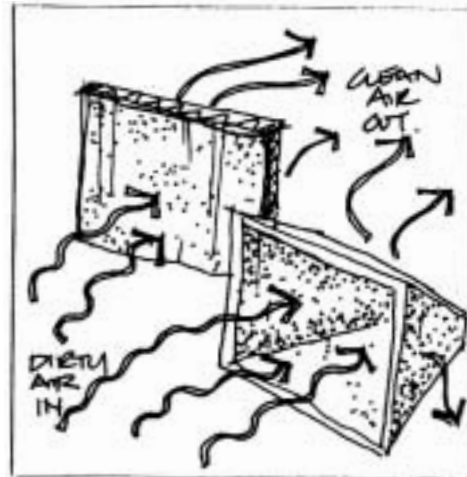
Consider the desirability and cost of providing individual room temperature control.

general principles

Design Standards and Policies

7.1.2 Systems shall provide outside air at not less than the rate of 7.5 l/s per person. Outdoor air intakes shall be located in accordance with AS 1668 Part 2 Clause 2.2 to ensure the supply is of adequate quality.

Design Diagrams



7.1.2

7.1.3 Ductwork shall comply with the requirements of the BCA, AS 1668 Part 1 and AS 4254.

Controls for residents bedrooms shall be simplified so that frail elderly residents may be able to operate them. Controls shall include an on/off switch and a means of adjusting the temperature set point.



7.1.4

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.1.5 To exercise care in the selection of an Evaporative Cooling System

To ensure absolute control of Legionella

7.1.6 To provide condensate drainage

7.1.7 To provide ventilation systems where required

Design Guidelines

Electric reheat zone control (heating, fighting, cooling) to be avoided to conserve energy.

Evaporative cooling may be considered for Western Queensland areas. Ensure design and maintenance provisions facilitate control of legionella. Also ensure provisions are made to enable closing of openings during winter heating.

If cooling towers are considered in the design of large central plant systems special attention to be paid to system design to control legionella.

Provide drains for condensate to external condensers. Provide condensate drainage to all cooling units. Condensate drains shall be accessible for cleaning and trapped where connected to drainage systems.

Ensure provision made to “deice” outside reverse cycle heating where winter temperatures fall towards zero without compromising heating.

In selected geographic locations, (southern Queensland) a combination of natural ventilation and mechanical ventilation/air conditioning may be utilised to provide climatic control.

Spaces continually occupied (not air conditioned) shall be provided with resident operated ceiling fans or wall mounted oscillating fans to enhance air movement within the room.

The particular location of facilities (adjacent shorelines) where rooms have external walls and windows may utilise natural ventilation where it is possible to obtain adequate air movement to achieve climatic control.

Where natural ventilation is not adequate, use supplementary mechanical ventilation or localised ceiling or wall mounted oscillating fans.

Internal rooms must be mechanically ventilated. This may be accomplished by exhaust ventilation where the makeup air is not contaminated. Where this is not possible, then the space shall be positively ventilated by means of a supply air system.

general principles

Design Standards and Policies

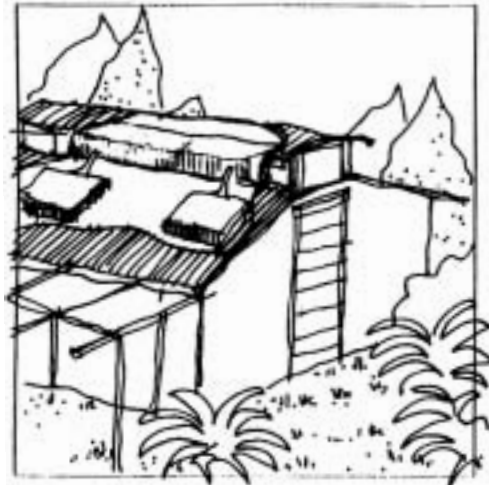
7.1.7 Blades of ceiling fans shall be 2400mm above the floor. Wall mounted fans shall be not less than 2100mm above the floor and shall be well guarded to prevent contact with the blades.

Refer to Workplace Health & Safety Advisory Standards and AS1668, Part 2

Refer to the BCA requirements for borrowed air. All systems shall be designed to introduce outdoor air into all areas to satisfy the requirements of the BCA and AS 1668 Part 2. Systems shall provide outside air at not less than the rate of 7.5 l/s per person.

Note:
The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

Design Diagrams



7.1.7



7.1.7



7.1.7

general principles

Design Objectives

7.1.8 To carefully select type of heating systems to be provided

7.1.9 To provide exhaust ventilation

Design Guidelines

Provide a heating system for all occupied areas where inside temperatures can be expected to fall below accepted comfort levels and it is Queensland Health policy to do so.

Where infra-red heating devices are installed in bathrooms, consider linkage to motion/occupation detectors to automatically turn on/off.

Where air conditioning is installed, the required heating system shall be integral with the air conditioning system, either by utilising reverse cycle systems or by utilising electric heater banks within ductwork or within the air handling unit.

Where air conditioning is not provided and a mechanical ventilation system utilising ducted supply air is to be installed, then consideration may be given to the installation of duct mounted electric duct elements.

Otherwise provide heating by means of low surface temperature radiators, e.g. floor mounted radiant units.

Select and locate radiant heaters for bathrooms carefully to avoid any possibility of fire risk or injury.

In bedrooms, the heater controls shall be accessible and easily operable by frail elderly residents.

Exhaust Ventilation: Exhaust ventilation shall be provided to all toilets, bathrooms, ensuites, dirty utility rooms, food preparation areas, cleaners rooms, store rooms, soiled linen cupboards and soiled linen holding rooms.

The exhaust ventilation systems serving bathrooms and ensuites shall be preferably designed to provide two ventilation rates within those compartments - base and boost (purge).

For bathrooms used by elderly provide an additional low speed fan selection for exhausts to minimise chills to wet skins. The boost may be activated by means of a push button within the compartment and operate under the control of an adjustable run timer.

general principles

Design Standards and Policies

7.1.8 The heating system shall be capable of maintaining internal temperatures at $21 \text{ deg C} + 10\text{C}$.

The design and installation shall satisfy the requirements of AS 1668 Part 1.

Radiators located where residents may come into contact with them shall be guarded to help prevent the residents receiving burns.

Controls for residents bedrooms shall be simplified so that frail elderly residents may be able to operate them.

Controls shall include an on/off switch and a means of adjusting the temperature set point.

7.1.9 Ventilation rates shall be not less than those provided for in AS 1668 Part 2, Table B1.

A base ventilation rate when satisfies AS 1668 code requirements and which will be in operation for the majority of the time.

A high ventilation or boost rate equal to 25 l/s per square metre.

Design Diagrams



7.1.8



7.1.9

Note:

The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.1.9 To provide exhaust ventilation (cont.)

7.1.10 To limit noise emission from ventilation, heating and air conditioning systems

Design Guidelines

Provide relief air for ventilated compartments by means of door grilles or door undervents. Where acoustic privacy is required, consider acoustic transfer ducts.

For ensuites or bathrooms, it is preferable for the relief air to enter the compartment at low level.

Separate exhausts to be provided for separate enclosures.

Enclosures that are similar in nature and use may be served by common exhaust systems.

Carefully select plant and air systems to limit noise level emissions to staff and resident areas. Locate plant that may create acoustic problems remote from residents and staff. Provide acoustic insulation and acoustic isolation where plant or air systems create unacceptable noise levels.

general principles

Design Standards and Policies

7.1.9 Clean areas shall not be ventilated by systems serving sanitary compartments, dirty utility rooms and similar spaces. Exhaust air discharges shall be in accordance with AS 1668 Part 2, Clause 3.7.

Exhaust air discharges shall be located not less than 6m away from outside air intakes or natural ventilation opening in accordance with AS 1668, Part 2 Clause 3.6.

7.1.10 Refer Q-Mech Standards

Design Diagrams

Note:
The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.2 Hydraulic Services

7.2.1 To provide hydraulic services to meet the requirements of Queensland Health and statutory authorities

7.2.2 To integrate systems where appropriate

7.2.3 Cold Water Supply Service and Reticulation

To provide the residential aged care facility with an adequate and safe cold water supply suitable for consumption, ablution and engineering purposes

7.2.4 To prevent back flows of contaminants to the hydraulic system

Design Guidelines

The design of the hydraulic services shall be carried out by a suitable qualified person (approved Hydraulic Consultant or Registered Engineer).

The Consultant shall be responsible for the total design and shall provide a suitable level of checking of the design documents. The design of the Hydraulic Services shall take into account the ground and site conditions, the nature of the building, the service function it is to perform and any likely future extensions.

Elements installed or located in inaccessible positions shall be maintenance-free for the expected life of the building.

The certification of the hydraulic services design shall be undertaken by a designer with experience in residential aged care facility hydraulics design. The designer shall certify that the design complies with all statutory requirements and these Guidelines.

Wherever possible or appropriate in the interests of a home-like environment and operational efficiency, integrate and collocate building systems and controls.

Where mains water supply is not available or not sufficient, provision shall be made for alternative water supplies (potable or non-potable) which shall also comply with the provision of this Standard.

The cold water supply system design shall reflect a capacity statement from the supply authority giving minimum (200 kPa) and maximum (500 kPa) available pressures at probably simultaneous flow of bathroom and other fixtures, plus full flow of continual operating equipment.

To prevent the domestic water supply from being contaminated by hazardous substances, provide back flow protection in accordance with the Standard.

general principles

Design Standards and Policies

7.2.1 The design shall comply with the Sewerage and Water Supply Act, all Statutory requirements, relevant codes and Australian Standards in particular AS 3500, the minimum technical standards of the Department of Public Works and Housing Natspec Master Specification except as otherwise described herein.

Refer Queensland Health Capital Works Guidelines - Infection Control

Design Diagrams

7.2.3 Piping materials and components specified shall comply with AS3500.1.2 1998 Section 2 and shall be suitable for the quality of water passed.



7.2.3

7.2.4 Back Flow Prevention: Back flow prevention devices shall be fitted to provide protection to the building occupants and the Local Authority Water Supply. Protection shall be in accordance with the Regulations, By-laws and AS3500.1 including identification of pipework and signs at outlets.

Note:

The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.2.4 To prevent back flows of contaminants to the hydraulic system (cont.)

7.2.5 To achieve the provision of best practice in hydraulic services

Design Guidelines

Back flow prevention devices shall be fitted to all showers and baths with flexible hoses and other hand held hose outlets including hose cocks. Ensure that the handpieces cannot come closer than 50 mm from the floor of showers and rims of baths.

Zone protection shall be provided to all fixtures except basins in dirty utility rooms.

Hand sprays over kitchen pre-rinse sinks and at bin wash areas shall have back flow prevention devices.

Consider the location of hose cocks and the provision of water points for irrigation.

To prevent infection by legionella, aerators shall not be used in areas accessible to residents. Laminar flow or similar type outlets are to be used.

Pipework shall be designed to suit maximum flexibility and when possible should not occur above bedrooms.

Ensure prevention of noise transference from pipework in ceiling spaces over bedrooms or other habitable rooms (e.g. acoustic treatment of pipework in ceiling spaces where noise transference could occur).

Consider the use of flow restrictors to water outlets, excepting laundries, kitchens and hose cocks.

Ensure the elimination of water hammer where solenoid valves and similar automatic on/off valves are to be used (i.e. use of water hammer arresters).

Check for the necessity of pressure reduction valves and filters for some equipment.

Provide identification of all pipework.

Ensure that all materials are suitable for their intended service and that all brass shall be de-zincification resistant (DR) grade.

general principles

Design Standards and Policies

7.2.4 Physical air breaks shall comply with AS3500.1 1998 Section 2.

Refer to Queensland Health Capital Works Guidelines - Infection Control

Design Diagrams



7.2.4

7.2.5 Showers shall be restricted to a flow of 9 litres per minute. Consider delay times in the sizing of flow restriction to basin taps in relation to the hot water dead leg size and length.

Pipework identification to AS 1345

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.2.5 To achieve the provision of best practice in hydraulic services (cont.)

7.2.6 Fire Hose Reel Service

To provide an adequate supply of water to each fire hose reel at the required flow and pressure

7.2.7 Hot Water Services

To provide hot water to all fixtures and equipment at the flows, pressures and temperatures required

Design Guidelines

All internal exposed plumbing pipework to be heavily chrome-plated.

All hydraulic services shall be provided with permanent identification in both colour and letter form.

Provision shall be made for the isolation of fixtures, tapware and equipment in logical groupings for service purposes. Ball valves are recommended. Records shall be kept of locations of all isolation valves on "as built drawings." All isolating valves (except c.p. valves at fixtures and equipment) shall be tagged.

All isolating valves shall be accessible for maintenance staff, preferably from corridors and service areas and not within private rooms (except isolating valves under fixtures).

NOTE: This service is also covered under the "Fire Hydrant Services" section in some projects. Refer "Fire Services Engineer".

Facilities for the generation and distribution of hot water shall be provided.

A number of types of system designs may be necessary in residential aged care facilities, i.e. small domestic style systems for en suites and flow and return systems for large ablution areas, kitchens and laundries etc.

Any warm water system considered must be analysed on the basis of maintenance costs (recurrent) and maintenance shutdown time requirements as well as initial capital cost.

The heat source for each system is to be determined in consultation with the electrical / mechanical engineers.

general principles

Design Standards and Policies

7.2.5 Refer Queensland Health Capital Works Guidelines - Infection Control

Design Diagrams

7.2.6 The performance of the system shall comply with the Building Code of Australia Section E1.4 and AS2441.

When the fire hose reel service is to come from the domestic supply, it is to be designed in accordance with the Building Code of Australia Fig E1.4.

Back flow prevention for fire hose reels is to be in accordance with AS3500.1.

7.2.7 The hot water reticulation shall be designed in accordance with the relevant codes and standards and the requirements of the Sewerage and Water Supply Acts. AS 3500 Part 4 and AS3590 are to be adhered to.

Hot water temperatures to be in accordance with AS3500.4.2 - 1997.

Note:
The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.2.7 Hot Water Services (cont.)

Design Guidelines

Provision shall be made to limit the supply temperature of hot water to all resident use fixtures to eliminate the risk of scalding. Maximum fail safe temperature at outlets shall not exceed 45°C for adult residents - design temperature range 40.5 to 43.5°C.

Hot water for use in ablutions should be generated at 70°C and reticulated to all such areas by means of a pumped circulating system.

Hot water for use in food service or laundry facilities should be generated at 80°C and reticulated to those areas by means of a pumped circulating system. Note: Residents must not be able to access hotwater outlets.

The re-circulating pipework shall be insulated to prevent loss of heat from the re-circulating pipework including manifolds. Where hot water re-circulating pipework is exposed to weather, the insulation shall be enclosed with weather resistant sheeting.

Hot water circulating pumps shall be in duplicate with time clocks or other means of daily alternate operation.

“Back Flow Prevention” and “Special Consideration” clauses under “Cold Water Reticulation” also apply to this section.

Where thermostatic mixing valves (TMV) are used, they shall be located for ease of maintenance. To assist in the prevention of the growth of legionella, dead legs from the TMV to the fixture outlet shall be kept as short as possible, but not exceed 6 metres. All dead legs must be able to be flushed out with minimum 60°+ water.

general principles

Design Standards and Policies

7.2.7 Thermostatic mixing valves are to be fitted with lock shields or installed in lockable boxes, accessible only by maintenance staff.

Minimum temperature within the hot water unit must be 60(C to prevent legionella as per AS3500.4.2.

Hot water temperatures for food preparation areas shall comply with the State "Food & Hygiene Regulations 1989" and the Local Authority guidelines.

The insulation should be 25mm thick sectional pipe insulation with sisalation facing.

Design Diagrams

Note:

The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.3 Sewerage Services

7.3.1 To provide an adequate sanitary plumbing and drainage system connected to the Local Authority sewerage system

Design Guidelines

Liaise with the Local Authority concerning a sewer connection for the property.

Inspection and cleaning facilities shall not occur in resident areas or in areas fitted with carpet, but be accessible externally or from suitable ducts.

Ensure required number and types of facilities are provided in accordance with relevant codes, standards and Local Authority regulations.

The system shall be designed to be easily maintained.

Adequate overflow relief gullies shall be provided to minimise back flow into buildings. Overflow relief gullies shall be charged by floor waste gullies, shower wastes and the like wherever possible.

Trade waste discharges: Appropriate design to accommodate areas of special discharge, e.g. kitchen wastes to grease traps. Grease traps must have gas tight covers.

The following general provisions shall be included in the hydraulic services:

All materials shall be suitable for their intended purpose. All brass shall be de-zincification resistant (D) grade. Pipe materials shall be compatible with the nature and temperature of discharge.

All material shall have MP52 approval. No unapproved materials to be installed if approved materials are available.

All hydraulic services shall be provided with permanent identification in both colour and letter form.

All internal exposed pipework shall be heavily chrome-plated.

Where possible, all vent and waste pipes shall be concealed.

general principles

Design Standards and Policies

Design Diagrams

7.3.1 All sanitary plumbing and drainage systems shall be designed to comply with the requirements of the Building Code of Australia, the Sewerage & Water Supply Act, other relevant Codes and Australian Standards and, in particular, AS3500.2 and the Local Authority

Trade waste designs shall be to the approval of the Local Authority Trade Waste Inspectors

Identification of pipes to be in accordance with AS1345

Materials to be in accordance with manual of authorisation procedures for plumbing and drainage products (MP52)

Refer Queensland Health Capital Works Guidelines - Ensuites

Note:
The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.3.2 To ensure floors are adequately drained to waste

7.3.3 To select and install fixture types to meet function requirements

Design Guidelines

Where possible, vents should be combined in roof spaces to reduce the number of roof penetrations.

Particular care is to be taken with falls to floors in patient wet areas. Additional floor wastes are required to prevent water escaping from patient shower and bathroom floors. Floor waste gully risers shall be 100mm and have removable grates.

When selecting floor grates, take into account workplace safety, i.e. non-slip.

Floor waste grates and clear-outs shall be brass, heavily chrome-plated.

Floor wastes in areas where trolleys are to be used shall have the floor dished to the outlet (500 mm radius). Floor wastes and clear-outs in vinyl floors shall be clamping ring type.

All plant rooms containing water vessels / substance shall be bunded and sufficient drainage provided to accommodate an uncontrolled leak within the plant room. Tundishes shall be provided to adjacent air conditioning condensate discharge lines (i.e. no condensate drains shall run across the top of plant room floors).

Dedicated bathrooms must have tundishes provided. In ensuite rooms/shower rooms and where free standing, fixed or mobile baths are used tundishes shall be provided.

WC pans in residents' toilets shall be wheelchair height and be suitable for the use of commode chairs. Pans shall have enclosed traps for ease of cleaning.

Refer to the Project Definition Plan (PDP) for the number and location of fixtures to be wheelchair accessible.

Toilets in residents' areas shall have cisterns with a minimum 6 ltr flush by either button to prevent blockages. This will need confirmation with the Local Authority.

general principles

Design Standards and Policies

7.3.2 Minimum falls of 1:40

Design Diagrams

Refer to Queensland Health Capital Works Guidelines - Ensuities

Refer AS1428.1-1998 "Design for Access & Mobility"

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.3.4 Stormwater

To discharge rainwater to a drainage system with provision for overflow in a way that will prevent the entry of water into the buildings in all weather conditions.

Design Guidelines

On large projects where a civil engineer is engaged, clearly define the boundary of work between consultants.

If the Local Authority requires the calculation of overland flows from areas outside the site, a civil engineer should be engaged.

Arrange with the Local Authority for a point of discharge and discuss the need or otherwise for detention ponds and pollution traps.

Stormwater from buildings and paved areas shall be disposed of in a manner acceptable to the Local Authority.

Wherever possible, buildings shall be designed without box gutters.

Provision must be made for gutters to overflow externally to the building in case of blockages.

Provision must be made for the prevention of leaf build-up in gutters, which in turn has the potential for building damage and service interruption, due to gutter overflow. Hail guards must be installed.

Rainwater pipes (RWP) shall incorporate relief grates at connection between RWP and stormwater drain. All RWPs to have cleaning access at base.

Stormwater drainage grates shall be cross webbed in car parks and paths and not be located in wheelchair access areas or trolley areas.

Paving areas shall be designed to the rainfall intensities nominated in the Standard.

Channel grates for road or footpath crossover drains shall be of lateral or longitudinal bar design.

Consideration shall be given for pollutant traps to be installed prior to connection to the authority drainage system.

All stormwater drainage systems should be gravity systems and pumping used only where gravity connection cannot be obtained.

Design sub-soil drains as required behind retaining walls and associated with roadways, paved areas and gardens.

Consider installation of sub-soil drains from gardens.

general principles

Design Standards and Policies

7.3.4 Roof and stormwater drainage shall be designed in accordance with the Building Code of Australia, AS3500.3 and the Local Authority. Roofs, gutters and downpipes shall comply with SAA/SNZ HB114:1998 “Guidelines for the Design of Eaves and Box Gutters”.

In selecting the rainfall intensities to be used in the design, Local Authority records must be consulted as well as records kept by the Bureau of Meteorology, together with the above Australian Standard.

Overflows must be able to pass the full flow under complete blockage conditions at the maximum designed rainfall intensities.

Eaves gutters shall be designed for an average rainfall intensity of 1 - 20 years and box gutters 1 - 100 years.

Surface drainage systems shall be designed to AS3500.3.2 1998 Section 5.

Note:
The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

Design Diagrams

general principles

Design Objectives

7.4 Hotel Services

Food Services - Kitchen

7.4.1 To provide suitably prepared and presented food to residents

7.4.2 To provide frozen food services

7.4.3 To provide fresh food services

Design Guidelines

Provide kitchen areas with sufficient space and facilities to suit food delivery process.

Kitchen size and location shall be determined from the size of the facility and the method of meal preparation.

Where the kitchen food preparation area is located in a separate building, a food service area should be provided for each residential unit.

Where kitchen is used by residents, area must provide a home-like environment.

Select food delivery method -

- (a) Frozen - heat packaged service.
- (b) Fresh preparation, cook-serve system.
- (c) Frozen food supplemented with cook-serve.

Frozen - Heat Packaged Service

If frozen packaged meals are provided, arrange necessary equipment for processing - freezer storage, relaxation cold store, bulk heating ovens.

Provide food preparation benches and serving benches space and trolleys for delivery.

Fresh Food Service

If fresh food service is selected - provide necessary equipment to enable preparation.

Fresh food service equipment includes - stoves, grillers, toasters, convection ovens, microwave ovens, blenders, food mixers, stock pots.

Provide fresh food and vegetable storage to suit consumption needs.

Refrigeration storage (freezer and cold room/cabinets) shall be separated from cook-freeze storage.

Provide cooling utensil storage system. All cooking utensils are tidily stored away but readily accessible for use as needed. Adequate numbers of utensils are available to prepare a full serving to all residents.

general principles

Design Standards and Policies

7.4.1 Kitchen and facilities to comply with Local Authority Regulations.

Design Diagrams

7.4.3 Freezer and cold room construction to comply with Q-Mech Standards and Local Authority Regulations.

Comply with health regulations, Local Authority Requirements, codes and standards.



7.4.3

Note:

The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.4.4 To provide a commercial grade kitchen where all food is centrally prepared at the facility for residents

7.4.5 To provide a serving kitchen for preparation and distribution of externally prepared food and some fresh food preparation

Design Guidelines

Commercial Grade Kitchen

Provide a commercial grade preparation kitchen complete with scullery, food preparation areas, cool room and freezer dry stores, serving and distribution areas.

Provide cooking ovens, ranges, steamers, boilers, bains marie and toasters.

Provide adequate dishwashing facilities.

Provide washing sinks and dishwashers and benches to process the soiled load between each meal seating.

For large facilities consider merits of conveyors and automatic through type dishwashers.

Provide trolley and tray washing facility.

Provide waste collection and disposal systems.

All food and packing waste shall be promptly collected and stored until waste removal is arranged.

Provide preparation facilities for special purpose diets.

Kitchen floors shall be slip resistance.

Provide ventilation, exhaust hoods, and tempered cooling services to suit the kitchen area where directed by Queensland Health.

Serving Kitchen

Provide a serving kitchen where the majority of cooking is external with some fresh food preparation. Serving kitchen to include reheat facilities plus food preparation areas and serving and preparation areas. In addition provide cold freezer rooms and short term storage.

Provide all of the basic facilities for a commercial equipment on a reduced scale.

general principles

Design Standards and Policies

7.4.4 Exhaust hoods to dishwashers to comply with Local Authority Regulations.

Design Diagrams



Exhaust to comply with AS 1668 Part 2

7.4.4



7.4.5

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.4.6 To provide a kitchenette for provision of light snacks and drinks to residents

Design Guidelines

Kitchenette

Facilities to be included for each residential facility (household cluster) for residents to readily obtain hot or cold light refreshments - light snacks.

Provide space for refrigeration, dish washer and microwave oven.

Include pantry for food storage, benches, sink area and trolley access.

Provide hot (boiling) water jug/urn service suitable for immediate preparation of tea and coffee.

Hot boiling water facilities to be located within a lockable cupboard.

Consider the provision of refrigerated water cooler.

Provide refrigerated storage for resident's bottled/packaged refreshments.

Provide suitable shaped stainless steel or ceramic hand basins.

Generic kitchenette design of services access to meet wheel chair accessibility/compatibility.

general principles

Design Standards and Policies

Design Diagrams

7.4.6 Wheel chair accessibility to comply with AS4299 - 1995 Adaptable Housing and Wheel Chair Housing Design Guide 1997.



7.4.6

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.4.7 Laundry Services

To provide a laundry service and maintain infection control

7.4.8 To provide a soiled and clean linen storage

7.4.9 To provide external linen processing to meet infection control standards

Design Guidelines

Provide a laundry service to meet the needs of the residents.

Select laundry/processing method -

- (a) External service.
- (b) In-house service.
- (c) Combination of (a) and (b).

Provide separate clean and soiled linen storage/handling areas.

Soiled linen storage areas shall be vermin proof.

Ensure all soiled personal clothing is separately tagged with resident's details, then separately stored, ready for laundering. Provide separate clean and soiled linen storage/handling areas.

Ensure all soiled personal clothing is separately tagged with resident's details, then separately stored, ready for laundering.

Provide clean linen and clothing processing and storage areas and containers.

After linen is laundered, sorted, ironed and repaired it shall be separately stored, ready for issue. Supply is to be adequate to meet needs.

Where external laundry services are utilised, ensure all necessary processing, collection and distribution facilities are provided.

External laundry processing facilities shall include separate service entrances, protected from weather, one for pickup of soiled linen and one for return of clean linen. Provide space/office for control of shipments and storage of records.

Provide separation between clean and dirty laundry and clean and dirty trolleys.

Provide or arrange a pickup/delivery facility which maintains separation of clean, orderly linen.

general principles

Design Standards and Policies

7.4.7 Comply with AS 4146

Assess cost benefits and social benefits where residents retain some personal responsibility. Queensland Health Linen Services Policies and Standards for Public Sector Health Care Facilities 1999

7.4.8 Ventilation to soiled linen stores shall be a separate system and comply with AS 1668 Part 2.

Design Diagrams

7.4.9 Layout shall comply with the requirements of AS 4146.



7.4.9

Note:

The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.4.10 To provide resident laundries for use of staff, residents and relatives

Design Guidelines

Resident Laundries

A small laundry for residents and staff washing of light laundry and personal items to be included as a separate room within each wing of a residential facility.

The room is to be accessible to relatives and visitors.

Resident laundry shall include space for washing machine and clothes dryer and ironing board.

Washing tub, benches and external drying areas shall also be provided.

Minor Laundry

Where an in-house laundry service are utilised, ensure the laundry is visually and acoustically isolated from resident accommodation units.

In-house minor laundry processing facilities shall include a sorting area for minor linen and personal clothing.

Equipment is to include hand washing facilities, sinks, laundry processing equipment eg. washing machines, clothes dryers, drying hoists and sorting tables.

In addition, a supply of trolleys, personal laundry bags and ironing facilities shall be provided.

Provide folding areas and a clean linen store together with sewing and repair facilities.

general principles

Design Standards and Policies

Design Diagrams

7.4.10 Comply with Laundry Standard, AS 4146.

Follow Occupational Health and Safety design guidelines relative to bench, trolley, sink and machine heights.



7.4.10

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.4.11 To provide access to all laundry equipment

Design Guidelines

Allow sufficient space for mobility aids access for residents to personally use laundry facilities.\

Commercial Laundry

Where identified in the PDP and where in-house laundry services demand, commercial equipment is to be provided.

Commercial laundry equipment is to be housed in a dedicated building visually and acoustically isolated from the resident accommodation units.

Provide linen received and sorting area including benches and trolleys and trolley washing facility.

Include commercial quality washer extractors with three phase power.

Consider water usage rates and waste water cooling disposal.

Provide electric/gas driers connected to external flues with control of lint dispersion within and external to the laundry.

Provide commercial steam operated ironers.

Provide an auto dosing detergent system with close control on the use of detergents. A chemical storage area is essential.

Provide a ventilated store for the storage of clean linen.

Consider provision of sewing and repair facilities.

general principles

Design Standards and Policies

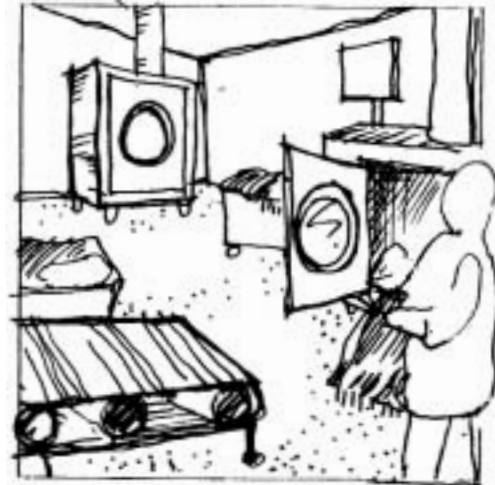
7.4.11 Position equipment to permit use by residents in mobility aids and allow suitable clear space for full access and manoeuvring. Consider principles of AS 1428.

Comply with Laundry Standard AS 4146.

Ventilation to the laundry in accordance with AS 1668 Part 2.

Steam boilers/generators to comply with Q-Mech specifications.

Design Diagrams



7.4.11

Note:

The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.5 Clinical Services

7.5.1 Dirty Utility Service

To provide space for disposal of waste products cleaning/ equipment, sanitising equipment and the storage of soiled linen trolleys

7.5.2 To provide regular cleaning

Design Guidelines

Provide dirty utility room and facilities for cleaning and storage of sanitary containers, including bed pans, bottles, sanitary containers, etc.

Provide soiled utility room for each functional unit. Provide bed pan washer/sanitiser for residents.

Provide slop hoppers or flushing sink, workbench and storage facilities for each functional unit.

Provide hot and cold water supply and appropriate hand cleaning agents to each room.

Provide vermin proof containers for refuse disposal.

Provide utensil washer for sanitising bowls and basins.

Provide suitable storage cupboards and racks for clean items.

CLEANING

The facility shall be maintained in a clean, hygienic condition at all times.

The requirements of the client's functional design brief shall be strictly adhered to.

Provide readily cleanable surfaces.

Provide adequate cleaning machines and accessories, manual cleaning tools and cleaning agents.

Provide cleaning and hygiene consumables.

Arrange conveniently located cleaners rooms and cleaning products storage rooms.

Arrange necessary storage and disposal measures for refuse collected from the facility.

general principles

Design Standards and Policies

Design Diagrams

7.5.1 Ventilation and exhaust to comply with AS 1668 Part 2

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.6 Electrical Power and Lighting Services

7.6.1 To provide electrical services designed and installed in accordance with relevant codes and standards

7.6.2 To provide an electrical power supply that is safe and reliable

7.6.3 To provide emergency power for the facility

Design Guidelines

Electrical Installation: Use a qualified and registered professional engineer to design the electrical services and witness all relevant tests.

The electrical contractor shall certify that the installation complies with the documentation and statutory requirements.

Switchboards: Locate switchboards within the facility so that they are in readily accessible, well illuminated areas where they do not compromise emergency egress.

Mount switchboards in a secure location, accessible only to staff or authorised personnel.

Provide switchboards capable of withstanding, without damage, the prospective fault levels at the installed location.

Provide distribution switchboards in each fire compartment area for general lighting and power and where required to supply miscellaneous items of equipment.

Incorporate a minimum 30% spare pole capacity in all distribution switchboards. Include all necessary busbars, tee-off connections, escutcheon cut outs, pole fillers and labels.

Standby Generator: Carry out an assessment of local area need for emergency power.

In locations where need exists and there is a high risk of unacceptable power outages, provide a standby diesel powered alternator. Complete with supply input to the main switchboard, automatic transfer switches, generator control panel, all control equipment, engine exhaust, cooling and ventilation systems, acoustic enclosure and bulk fuel storage. Size the standby generator to carry 100% of the building load.

In other locations provide external power inlet, cabling and switching for a portable generator to be plugged in and connected to the main switchboard, to supply 100% of building load.

general principles

Design Standards and Policies

7.6.1 Electrical installation to AS 3000, the Supply Authority regulations, the Building Code of Australia and Australian Standards

7.6.2 Switchboards to AS 3439.1 Low Voltage Switchgear and Controlgear Assemblies

Provide at least Form 3B segregation in accordance with AS3439.1 for the site main switchboard.

Provide Form 1 segregation up to 150kVA and Form 2 above that rating for distribution switchboards.

Provide a minimum protection classification of IP51 to AS 1939 for all switchboards.

Design Diagrams



7.6.2

7.6.3 To AS 3010.1 Electrical installations - Supply by Generating Set.

Note:

The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.6.4 To provide reticulated power throughout the facility

7.6.5 To ensure all cabling complies with Australian Standards

7.6.6 To provide adequate lighting to meet the needs of the residents and staff

Design Guidelines

Electrical Cabling: Provide capacity for 10 years growth in demand, with a minimum 10% spare capacity in all cables after allowing for connected load, derating factors and voltage drop.

Use multi-stranded copper cables, except for MIMS

Joints of any type are not permitted within submains cables.

Use circuit breakers of the appropriate fault rating to protect cabling.

Generally conceal all cables except in engineering services plantrooms.

Run cables to maximise future flexibility.

Internal Lighting: All areas shall be adequately illuminated by natural light or electric lighting to provide a safe living and working environment. The lighting shall be designed to minimise operating costs by maximising the use of natural lighting.

Design lighting in office areas to ensure a work environment free of glare.

Living areas within the facility shall have residential style luminaries. Provide minimum 200 lux general room lighting.

Consider alternative switch types including large rocker types of light and power switches.

Consider movement switching of lights to specific areas or low wattage lights permanently on.

Suitably identify every light switching position with circuit and phase number.

general principles

Design Standards and Policies

7.6.4 Comply with AS 3000, AS 3008.1 and AS 3009

Provide fire resistant cables to WS51 in accordance with AS 3013 for emergency services)

7.6.5 Meet the segregation requirements of AS 3000, AS 3080 and TS009

7.6.6 To AS 1680.1 Interior Lighting - General Principles and Recommendations

To AS 1680.2.0 Interior Lighting - Recommendations for Specific Tasks and Interiors

Comply with the requirements of AS 1428 for mounting heights of switches

Design Diagrams



7.6.6

Note:

The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

- 7.6.7 To provide bedside lighting with accessible switching

- 7.6.8 To ensure external lighting meets security and access requirements

- 7.6.9 To provide emergency lighting to provide access lighting in the residences on failure of main supply

- 7.6.10 To provide power outlets throughout the facility

Design Guidelines

Bedside Lighting: Provide dimmable bedside lighting for residents in addition to normal room lighting. Avoid hospital like over-bed lights. Locate switch to allow ease of operation by the frail elderly resident occupying the bed. The bedside lighting should also be two-way switched from the room entrance.

Night Lighting: Provide reduced level night lighting to all corridors and exit passageways within the facility where the normal lighting may be extinguished during the night. Suitably space night lights to evenly illuminate each area including ramps and stair treads.

External Lighting: Provide well lit pathways from entrances and exits to the public thoroughfare.

Take into account the need to deter intruders in the design of external lighting. Pay particular attention to entry areas, carparks and unattended areas.

Emergency Lighting: Provide emergency lighting in corridors, stairways, toilets, ensuites, utility rooms, treatment areas and other critical use areas.

The emergency lighting system shall be a single point system with an electronic monitoring and automatic testing system.

Lighting Controls: Provided a separate manual ON switch to override any automatic lighting controls.

Mixed power and lighting circuits are not permitted other than single-phase extraction fans in single toilet, shower or bathroom areas.

Power Outlets: Provide an adequate number of general-purpose outlets for all anticipated uses. Provide a separate outlet for every appliance in use at any one time.

Provide separate surge protected circuits for computers and other electronic equipment. Provide green power outlet faceplates for computers, engraved with the words "computer only".

Suitably identify every power outlet with circuit numbers.

Provide isolation switches for all direct connected equipment.

general principles

Design Standards and Policies

Design Diagrams

External lighting to Public Lighting Code
AS 1158.1

Exterior luminaires shall be weatherproof
to IP56

- 7.6.8** Emergency lighting in accordance with the
Building Code of Australia and AS 2293
Emergency Evacuation Lighting in Buildings

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed
should be adopted, except where in conflict with the Queensland
Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.6.11 To provide a safe electrical system that protects staff and residents from electrical shock

7.6.12 To protect the facility from lightning strikes

7.6.13 To limit the effects of electromagnetic fields

7.6.14 To provide sufficient hot water to meet the needs of residents and staff

Design Guidelines

Electrical Protection: Provide earth leakage circuit breakers for general purpose power outlet circuits throughout the facility.

Lightning Protection: Investigate and analyse the risk of lightning strikes on the facility and provide the level of protection recommended by the standard.

Do not use a lightning protection system, which utilises the building fabric to conduct groundstrokes to earth.

Provide surge protection and diversion devices within the main switchboard and distribution switchboards to protect electronic equipment from transient overvoltage surges associated with direct or indirect lightning strikes.

Electromagnetic Interference: Incorporate demonstrable electromagnetic field mitigation strategies and techniques. Meet environmental targets and limit EMI effects.

Hot Water Units: Provide electric or solar, storage hot water units to supply hot water to the facility.

Consideration should be given to multiple units and interconnection of units to assist in reliability of supply.

Refer section 7.2 Hydraulic Services.

general principles

Design Standards and Policies

7.6.11 Earth leakage protection to AS 3190 Type 2

To AS 3003 Electrical Installations - Patient Treatment Areas of hospitals and medical and dental practices

7.6.12 Lightning Protection system design and installation in accordance with the recommendations of AS 1768

7.6.13 Prudent Avoidance of Magnetic Fields in the Built Environment. Department of Public Works, Built Environment Research Unit To AS 1044

7.6.14 To AS 1056.1 Storage water heaters

To AS 2712 Solar water heaters - design and construction

Design Diagrams

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.7 Telecommunications

7.7.1 To provide telecommunications services designed and installed in accordance with the relevant codes and standards

7.7.2 To provide efficient, easy-to-use, and reliable internal and external telecommunication system/s within the facility for staff and frail elderly residents

Design Guidelines

Telecommunications Installation: Use an appropriately qualified and registered professional engineer to design the telecommunications services and witness all relevant tests. All systems shall be designed and developed in consultation with the relevant government agency.

The telecommunications contractor shall certify that the installation complies with the documentation and all statutory requirements.

Telecommunications cabling: Provide an integrated voice/data cabling infrastructure, complete with 8-way modular outlets and patch panels to allow flexible patching of voice/data services to the required areas. The installation shall be modular, easily extended and enable upgrade of hardware technology without reviewing the cabling infrastructure.

Provide 'site certification' for the cabling infrastructure. This includes a minimum of 15 years manufacturer's full parts and labour warranty, and which certifies the site for operation of all protocols, present and future, which are endorsed for operation over Class D UTP cabling and connecting hardware, and compliant multi-mode optical fibre cabling.

Integrate fittings and conceal where appropriate to maintain the "residential" atmosphere.

The common cabling infrastructure can be used for the following services:

- Telephone
- Computer (Data)
- Facsimile
- Staff Call Systems
- Intercom
- Paging
- Security
- MATV - Video/Radio distribution
- Telemedicine Videoconferencing

Provide surge diversion devices on incoming cabling into the building, to protect against effects of lightning strikes.

general principles

Design Standards and Policies

Design Diagrams

7.7.2 To be a minimum Class D performance for Category 5 as per AS3080 Clause 7

Comply with AS 3080

To AS1768 Lightning Protection - provide over voltage protection

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.7.2 To provide efficient, easy-to-use, and reliable internal and external telecommunication system/s within the facility for staff and frail elderly residents (cont.)

7.7.3 To arrange for necessary connection of carrier services to the facility

Design Guidelines

Locate patch panels, building distributor, and floor distributors in accessible areas and provide adequate room to cater for designed services and future expansion.

Protect the patch panels to prevent inadvertent or unauthorised removal of patch cords or changes to essential patching configurations.

Carry out patching in a logical and identifiable manner, utilising cable management pathways and ducts. Record patching details.

Use cable trays and catenaries in order to keep communications cabling in neat and orderly runs. Utilise ceiling space and ducts to conceal all cabling. Coordinate cable runs with other services to ensure that there are no conflicts.

Coordinate locations of outlets with the electrical services in order to keep a consistent mounting height and to ensure that power requirements are met.

Coordinate electrical and communication outlets in ceilings to limit the number of fittings and penetrations.

Test all outlets to ensure that Category 5 performance is achieved and provide records of tests.

Carrier Services: Conduct a review of services and user requirements to determine the required extent of telecommunications carrier services. Such services may include a combination of:

- PSTN exchange line services
- ISDN services (OnRamp and Micro Link)

Provide for the installation of incoming services, including all necessary pits, underground conduits, penetrations and ducts. Exact route of incoming services to be determined in conjunction with the Carrier.

general principles

Design Standards and Policies

7.7.2 TS 009 Appendix E gives minimum access clearances for Campus Distributors/ Building Distributors

In accordance with AS3080 Clause 11

Maintain the required minimum distance of segregation of services in accordance with AS3000

Location of data outlets shall generally comply with the provisions of AS3080

7.7.3 For small installations, where the number of incoming telephone lines does not exceed four (4) Australian Standards SAA Communications Cabling Manual Part 4 "Installation practices - Domestic and small business premises" & AS3086 becomes applicable

Pathways to be in accordance with SAA HB29 Telecommunications Cabling Handbook

Note:
The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

Design Diagrams

general principles

Design Objectives

7.7.4 To provide a telephone system for the facility

7.7.5 To provide a system to allow residents to call staff for assistance

Design Guidelines

Telephone System: Provide a system to cater for administration, resident rooms, staff and other areas deemed necessary.

System to be capable of :

- 24 hour reception of calls.
- Night switching to alternative staff locations.
- Automatic diversion for after hours.
- Four (4) hours battery backup.
- Call Accounting System for call cost reporting.
- Administrative management system for programmable levels of access.

Resident handsets need to be easy to use, and accessible to disabled residents. Consideration should be given to the provision of large number and tactile keypads, and features that would assist the hearing impaired.

Provide residents with 24-hour access to make external calls. This may require the provision of pay telephones (e.g. blue phone) in areas where there are no resident handsets provided).

Size the system to be expandable up to the number of extensions to suit staff and frail elderly residents, plus 50% spare capacity.

Staff Call System: Provide a system which patients can use to call for assistance at each bed position, in resident toilets, bathroom, showers and other appropriate areas.

Provide staff assist buttons with reassurance lamps, cord out alarm with reassurance lamp, and cancel buttons. Also consider the use of emergency buttons and corridor indicators, as appropriate.

The Staff Call System shall be:

- Microprocessor based;
- Include current, stable technology;
- Be capable of expansion and integration.

Design the system such that all calls are to be cancelled manually at the point of origin only.

general principles

Design Standards and Policies

7.7.4 Equipment shall be Austel/ACA Certified products

Equipment must comply with the Queensland Government Information Technology Conditions

Design Diagrams

7.7.5 Generally in accordance with AS 3811- Hard-wired patient alarm systems

AS3811 Section 3.1 & Appendix B refer to low dependency care facilities

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.7.5 To provide a system to allow residents to call staff for assistance (cont.)

7.7.6 To provide a paging system for staff

7.7.7 To provide annunciation services

Design Guidelines

Call buttons must be wall mounted at a height that is easily reached. Cord operated systems should be provided where possible. As an extra feature, call buttons at beds may also be incorporated into the one pendant control unit that also controls the light switching, radio and television controls, etc.

Cord systems in wet locations shall be weatherproof and mounted at hip height such they can be reached from a fallen position.

Reassurance lights are to be provided for each call button. These are to be illuminated on activation of the call button.

Audible indicators are to be provided for alarm response.

Battery backup (minimum of 4 hours battery life) is to be provided such that the system is not affected during an electrical power failure.

Fault monitoring and reporting facilities are to be provided.

Staff Paging: Where the need has been identified to contact key staff members and/or to request assistance from personnel not situated locally, provide a paging system that meets these requirements.

Evaluation of various designs to be carried out to find the most suitable site solution.

This may include but not necessarily be restricted to:

- Radio-frequency type, alpha-numeric pagers; and
- Dedicated intercom/paging system.

Where the facility has an Emergency Warning Intercom System (EWIS), complete with evacuation tones or messages, the public address system is to be integrated with it in such a way that the emergency tones and messages take first priority on the system. Broadcasting of EWIS messages and tones shall result in all other broadcasts being muted.

general principles

Design Standards and Policies

7.7.5 Comply with AS3811 Section 3.4 (Buttons) and Section 3.5 (Pendants)

Cord systems in wet areas to have IP65 rating as per AS1939

Lamps to be as per AS3811 Table 3.2.2

Audible indicators to comply with AS3811 Section 3.2

To AS3811 Appendix B

Design Diagrams

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.7.8 To provide television services for the facility

7.8 Safety & Security

7.8.1 To provide a level of safety and security for frail elderly residents, staff and visitors to the complex

Design Guidelines

Television services: Provide an Master Antenna Television (MATV) system to receive all regional off-air channels. Consider a design, which will be capable of including future digital services.

Pay Television: Where regional pay-television services are available, make provision for future connection to the MATV system.

Radio services: Incorporate major regional AM and FM services available off-air as additional channels on the MATV system.

In-house video services: Where an identified need exists, provision to be made for an in-house video channel on the MATV service. The control location of this video channel to be coordinated with the facility manager.

Security System: Undertake a security risk assessment in conjunction with facility management, to establish what measures are needed to be implemented to provide the required level of protection of the people and property for which the facility has duty of care.

This may include but not necessarily be restricted to:

Access control - including door intercom and remote release facilities; ensure that aspects related to invasion of privacy are considered only.

CCTV monitoring of entry points/intercoms and public reception areas.

Intruder detection be provided to areas where handling and storage of valuable assets occurs.

Monitoring of frail elderly residents prone to wandering away from buildings and into harm. This system is to only be designed and installed where an identified need exists.

general principles

Design Standards and Policies

7.7.8 MATV System Performance to be equal or better than that in AS1367 Section 5

Installation to be in accordance with AS1367

Design Diagrams

7.8.1 In accordance with AS 4485.2 Sections 2 & 3

Controlled areas are described in AS4485.2 Section 5.10.4

Access Control is described in AS4485.2 Section 5.14

To be in accordance with Queensland Health policy on CCTV installations

Comply with AS2201 in accordance with AS4485.2 Sections 5.10.2(b) & 5.13

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.9 Fire Detection & Alarm Services

7.9.1 To provide fire protection services designed and installed in accordance with relevant codes and standards

7.9.2 Comply with the objectives of the BCA:

To protect the life safety of occupants, and fire fighters

To provide facilities for the fire brigade to undertake fire fighting operations and to prevent the spread of fire between buildings.

Design Guidelines

Fire Protection Services Installation: Use an appropriately qualified and registered professional engineer to design the fire protection services and witness all relevant tests.

The fire protection services contractor shall certify that the installation complies with the documentation and statutory requirements.

Early Warning/Fire Detection:

Provide a suitable fire detection and alarm system to all buildings containing sleeping accommodation, care areas and all buildings which are essential for the operational and care of the frail elderly residents.

Include all buildings which will be visited by the residents and other buildings which in the opinion of the design engineer considered to be beneficial if a fire detection and warning system is installed.

Information/alarm signals shall be available in a convenient and safe location for the staff to investigate the source of the alarm. Information must be easily understood.

Provide break glass manual fire alarms.

Provide critical and concise information for the staff in the building to identify the activated alarm.

Give consideration to the provision of early detection and warning of a fire in its incipient stage. Systems with similar sensitivity to a Multipoint aspirating smoke detector should be considered.

Give consideration to the provision of critical information to the staff in other buildings so that they can be alerted in the event of an alarm in a building.

Give consideration to the provision of pre-alarm functions to warn staff of a potential hazardous situation.

general principles

Design Standards and Policies

Design Diagrams

7.9.1 Fire services installations shall comply with the Building Code of Australia (BCA), supply authorities, fire authorities, and relevant Australian Standards

Contractor responsible for the fire systems installation must be registered with the Fire Protection Contractors Registration Board (FPCRB)

7.9.2 Fire Detection Systems in residential and health care areas shall detect a low heat smouldering fire. Systems shall comply with AS1670

Note:
The above recommended references are not exhaustive. The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.9.2 Comply with the objectives of the BCA: (cont.)

7.9.3 To provide a safe environment that minimises fire, security and emergency risks

7.9.4 To provide an acceptable level of life protection to the occupants

Design Guidelines

Give consideration to the provision of systems with high levels of reliability and designed to eliminate 'unwanted' or spurious alarms.

Give consideration to the provision of systems that interface with the nurse call system.

Provide detectors without a flashing LED in its normal mode.

For conventional alarm systems, alarm zones shall match the smoke/fire compartments of the building.

Give consideration to the provision of an analogue based type detection system and to allow separation into small addressable zones.

Give consideration to the provision of a MIMIC panel at the main gate for the responding fire brigade.

Minimise maintenance requirements and disturbance of the occupants.

Emergency Warning and Intercommunication System (EWIS)

Give consideration to reduce sound pressure level for the alert and evacuation tones to minimise trauma.

Strobe lights to be synchronised (yellow for alert and red for evacuation).

Provision for automatic and manual operation.

Provide visual indication at unit central office.

Fire Sprinkler Systems.

Fire sprinkler systems shall be installed where required under Queensland Health policy, the BCA and where required to meet the objectives of the BCA

general principles

Design Standards and Policies

Design Diagrams

7.9.3 EWIS system to to installed in accordance with BCA and AS2220

7.9.4 System shall be installed in accordance with BCA and AS2118

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.9.4 To provide an acceptable level of life protection to the occupants (cont.)

7.9.5 To facilitate the fighting of fire and to minimise damage to the building and its contents

Design Guidelines

Fire sprinkler systems shall be considered relative to their ability to restrict fire growth to the compartment of origin, facilitate the fighting of fire, to minimise damage to the building and its contents, prevent fire spread to adjoining buildings.

Where sprinkler systems are provided give consideration to protect areas of the building not only selected areas.

Give consideration to the use of residential and fast response type sprinklers and the use of concealed sprinklers in areas where the occupant could use the sprinkler for self-harm.

Fire sprinkler systems shall be connected to a dedicated fire main where possible.

When the fire main is not available, connect to the existing site reticulation main. Provide a brigade booster at each building - system isolation valves shall be monitored.

Fire Hydrants

Provide a fire hydrant system to serve a building having a total floor area greater than 500square metres and where required by the Queensland Fire and Rescue Authority (QFRA).

Give consideration to external fire hydrants with twin outlet hydrant stand pipes before internal hydrant.

System to be easy to identify and not an impediment to the residents.

Standpipe shall have a concrete surround and be painted.

System also to be sufficient in capacity to deal with the expected fire.

Provide hydrant booster where required.

Give consideration to the provision of a ring main with isolation valves such that 75% of the hydrant will remain operational at all times in a large complex.

general principles

Design Standards and Policies

Design Diagrams

7.9.5 System to be installed in accordance with BCA and AS 2419



7.9.5

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.9.5 To facilitate the fighting of fire and to minimise damage to the building and its contents (cont.)

7.9.6 To ensure all fire systems and equipment are properly maintained - to ensure that they will operate effectively, promptly and achieve the BCA objectives and performance requirements when required

7.9.7 To enable staff to effectively evacuate the facility and know how to use fire fighting equipment

Design Guidelines

Fire Hose reels

Fire hose reels shall be installed in all buildings.

Provide a fire hose reel on each level of a building.

Provide back flow prevention devices if fire hose reel is connected to the domestic water supply.

Ensure fire hose reels are easy to use.

Provide jet spray combination nozzle.

Fire Extinguishers

Fire extinguishers shall be provided in all buildings.

The discharge of an extinguisher shall not have a detrimental effect on the occupants health.

Give consideration to the use of inert gas type fire extinguishers ie CO₂ and NAF₃.

All fire extinguishers shall be easy to identify and operate.

Maintenance

Provide documentation on policies, maintenance program, reviewing procedures, evacuation drills, equipment testing and audits.

Clear instructions to be maintained with regular testing of fire, evacuation and other emergency equipment. Participation of management, staff and residents.

Ensure regular fire drills and training of staff in the use of fire fighting equipment.

Prepare emergency evacuation plan to provide orderly evacuation of occupants in the event of an emergency.

Building occupants to be trained in the requirements of fire and evacuation procedures and the use of installed first attack fire fighting equipment.

general principles

Design Standards and Policies

7.9.5 To be installed in accordance with BCA and AS2441 and local water supply Authorities

To be installed in accordance with BCA and AS2444

7.9.6 To be provided in accordance with the BCA and relevant Australian Standards

Design Diagrams



7.9.7

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.

general principles

Design Objectives

7.9.8 To minimise the outbreak of fire

Design Guidelines

Remove obstructions in the path of egress and access to fire fighting equipment.

Reduce fire load - eg. storage of rubbish and flammable material.

Reduce ignition source - eg. naked flames, free standing heating appliances.

Ensure electrical equipment and appliances are maintained.

general principles

Design Standards and Policies

Design Diagrams

Note:
The above recommended references are not exhaustive.
The principles of the non-mandatory design standards listed should be adopted, except where in conflict with the Queensland Health Department policies, guidelines, or care models.