

APPENDIX B

Requirements specific to Government Regional Officers' Housing (GROH)

0184 TERMITE MANAGEMENT

1 GENERAL

1.1 STANDARD

Termite management system notice

General: Permanently fix a durable notice in a prominent location to BCA 3.1.3.4 and as follows:

- Single dwellings: One notice in the main electrical switchboard.
- Other dwellings: One notice to each dwelling in the electrical meter box.

0250 LANDSCAPE – GARDENING

3 EXECUTION

3.2 PREPARATION

After site clearing

Relief gullies: Provide overflow and disconnected gullies, in locations other than paved areas. Install grating at a level which allows for the placing of 100 mm thick garden soil over the existing soil level.

After site cleanup: Remove undulations and fill depressions to form even grades in areas to be covered by garden soil.

3.3 WATERING

Reticulation

Garden reticulation cabinet:

- Cabinet: Galvanized sheet steel with top hinged door and the Housing Authority E key lock.
 - Size: 450 mm (high) x 450 (width) x 150 mm (clear internal depth).

Services requirements for cabinets: Provide the following:

- A single GPO.
- Conduit with draw wire, extending from the cabinet to the nearest garden bed. If required, run under paths. Terminate to allow connection of landscaping services at a later date.
- Isolating valve to the PCA.

0271 PAVEMENT BASE AND SUBBASE

1 PRODUCTS

1.1 BASE AND SUBBASE MATERIAL

Stone subbase for bitumen and concrete paving

Subbase material: Clean, clay free, gravel, crushed rock or limestone.

2 EXECUTION

2.5 STONE SUBBASE

General

Finished thickness: 150 mm.

Placing: Place and compact subbase material in layer thickness required to achieve best compaction with the compacting equipment type.

Minimum compaction: 90% maximum density.

Grading: Finished subbase to have uniform falls.

0272 ASPHALTIC CONCRETE

1 EXECUTION

1.1 GENERAL

Grading

Minimum grade (Vertical:Horizontal): 1:100.

Maximum grade (Vertical:Horizontal): 1:8.

Edge restraint

Concrete kerbing: To all edges.

1.2 HOT MIX ASPHALTIC PAVING

Preparation and priming

Preparation: Before priming, remove loose material from stone base.

Prime coat: Apply bitumen emulsion to stone base at a rate of 1 L/m².

Surfacing

Bitumen emulsion: Minimum 60% bitumen content and conforming to AS 1160.

Hot mix asphalt: Conform to AS 2150 and the following:

- Nominal mix size: 5 mm.
- Binder: Bitumen.
- Binder content: 6%.

Spreading: Lay hot mix asphalt over primed base by spreading mechanically in conformance with AS 2150. Compact as soon as possible with a roller.

Finished asphalt thickness: Minimum 20 mm.

Finished asphalt surface: Impervious, smooth, hard, with uniform falls.

1.3 COLD MIX ASPHALTIC PAVING

Aggregate

Requirement: To AS 2758.2.

Preparation

General: Remove loose material from stone base.

Surfacing

Bitumen emulsion: Minimum 60% bitumen content.

Surfacing: Apply bitumen emulsion to base at a rate of 1.5 L/m² and immediately cover with crushed granite compacted with a roller as follows:

- First coat: Crushed granite passing a 10 mm sieve.
- Second coat: Crushed granite passing a 4.5 mm sieve.
- Third coat: Crushed granite passing a 2 mm sieve.

Grading: Finished paving to have uniform falls.

0274 CONCRETE PAVEMENT**2 EXECUTION****1.1 GENERAL****Paving slabs**

Requirement: 38 mm thick precast vibrated concrete.

Surface: Natural grey smooth finish with pencil edge curved top arises.

Under LPG bottles: Provide two 600 x 600 mm slabs.

Installation

Bedding sand for paving slabs: Provide a loose sand layer as follows:

- Sand: Clean, well graded, and passing a 2 mm sieve.
- Thickness: 20 mm.

Gap between slabs: 5 mm maximum.

Jointing between paving slabs: After laying, fill joints by sweeping in sand. Remove excess sand.

In situ concrete panels: 50 mm thick mass concrete with surface matching slabs and V joints aligning with joints between slabs.

0331 BRICK AND BLOCK CONSTRUCTION**3 EXECUTION****3.7 BUILT-IN COMPONENTS****Lintels**

Installation: To AS 4773.1 Section 12.

3.8 STEEL MESH JOINT REINFORCEMENT**General**

Requirement: Provide galvanized steel masonry mesh joint reinforcement to AAC walls at the following horizontal mortar joints:

- Internal leaf of external cavity walls: One course above main floor level.
- Below wall openings: One course below, extending 400 mm beyond opening edges.
- Door head course of all walls.
- Above wall openings: Every course, extending 400 mm beyond opening edges.

Installation: Using 70 mm wide mesh, provide minimum 1.9 mm² cross section area of longitudinal wires.

- Lap mesh at corners and 100 mm at joints.

3.9 PARTY WALLS**Walls separating dwelling units**

Hollow bricks: Do not use.

Non-cavity walls: May be used if:

- The dwelling units to be separated have the same floor level.
- The wall does not form face brickwork internally or externally.
- The wall is supported by continuous concrete floor slab.
- The wall does not separate a bathroom, laundry or kitchen from a habitable room.
- The height of wall from floor level to underside of ceiling joist/trimmer is not greater than 3000 mm.

Cavity walls: Construct from 90 mm wide AAC blocks if:

- The masonry is not in contact with soil.
- The wall does not form face brickwork externally.

- The wall does not separate a bathroom, laundry or kitchen from a habitable room.

Other walls separating dwelling units: Cavity walls constructed with minimum 90 mm wide, cored or solid, calcium silicate or clay bricks.

Wall height: Extend wall to maximum 85 mm below the roof covering.

0421 ROOFING**2 EXECUTION****2.3 ROOF LIGHTS****General**

Type: Translucent acrylic dome supported on prefinished steel frame with ducting to a translucent plastic ceiling panel.

Nominal size:

- Roof dome: 600 mm x 600 mm.
- Ceiling panel: 550 mm x 550 mm.

Installation: To the manufacturer's recommendations.

Ventilating roof light: Where required, provide minimum 18,000 mm² effective ventilation to outside air. Vent to be insect screened.

Ducting: Prefinished/coated steel sheeting or hardboard.

- Duct interior surface colour: White.

Ceiling panel: Finish flush with ceiling lining.

0451 WINDOWS AND GLAZED DOORS**2 PRODUCTS****2.2 COMPONENTS****Window screens**

Location: Provide to all windows.

Requirement: Powder coat finished stainless steel screw clamped 0.9 mm strand type 304 stainless steel wire mesh screens.

Testing: Provide certification that screen has been tested to withstand impact loading equivalent to a 4 kg piece of timber of 100 mm x 50 mm crossed section, projected at 15 m/s at any angle.

3 EXECUTION**3.1 INSTALLATION****Sliding windows**

Locking: Provide keyed vent lock bolt to each sliding window sash.

Lock installation: Install bolt so that sliding sash may be locked in closed position or with a 100 mm opening. Provide holes as required.

Keying: Provide as follows:

- Lock bolts in each dwelling to be keyed alike.
- Number of keys: Two for each dwelling.
- Key labels: Identify dwelling number, lot number, street number, street name and locality.

Security

Requirement: Provide hinged and sliding security screen doors to the external face of each entry door to dwelling as follows:

- Frame finish: Powder coated to match adjoining frame colour.
- Mesh: Heavy duty insect screen mesh.
- Sliding security screen: To sliding glass doors.

Installation: To AS 5040 by a Police Licensed security installer.

Window screens

Mounting: Top hung, mounted in a surrounding base frame with 3 mm thick aluminium support legs, mitred and corner staked at intersecting corners.

- Hinge: Minimum three 70 mm fixed pin hinges for each screen.
- Hinge position: 170 to 180 mm from outer edge of screen at 500 mm centres.

Window perimeter: Provide a flat, stable, sealable surface to mount the base frame of the security debris screen.

- Insect seal: Full perimeter seal.

Screen (surround) frame: 70 x 20 mm.

Screen fixings: Tamper resistant fixings for securing the base frame to window perimeter to the manufacturer's recommendations.

Wire surface clearance: Provide projection so that wire clearance from glazing is not less than the rate of instantaneous deflection measured during testing, 105 mm optimum.

Escape latching: Provide keyless exit in event of an emergency, for the full width of the screen, which is inaccessible from outside the building.

Gravity self-centring hook: Provide hook to hang screen from rafter or eaves when in the fully open position.

- Hook material: 6 mm galvanized steel rod.

Finish: Powder coat.

Marking: Provide the manufacturer's name in 3 mm high letters on the internal face of the frame using one of the following methods:

- Embossing the frame.
- Adhesive, transparent acrylic, untearable polyester film label.

0551 JOINERY**1 PRODUCTS****1.3 WARDROBE, CUPBOARD AND DRAWER UNITS****Wall recessed wardrobes – sliding door**

Built-in wardrobe: Provide wardrobe consisting of the following:

- Wheel system: Metal ball bearing rollers.
- Door panels: 16 mm thick, melamine finished.
 - . Maximum width: 1200 mm.
- Mirror door panels: Grade A pure silver safety mirror fixed to door panels enclosed on all sides with rubber gaskets.
- Hanging rails.
- Interiors: 16 mm thick high moisture resistant particleboard or MDF.
 - . Colour: White.
- Melamine shelving and units.

- Frame colour: White.

0572 MISCELLANEOUS APPLIANCES AND FIXTURES**1 PRODUCTS****1.1 COMPONENTS****Rangehood**

Type: Stainless steel 900 mm wide with dual fan, as documented.

Flue: As documented to suit rangehood model.

Exhaust: Provide ducting to the outside as follows:

- Northern areas: Side exhaust with PVC-U cover painted to match interior colour scheme.
- Southern areas: Stainless steel ducting projecting through the roof. Provide roof cowl to pipe as documented.

Installation: To the manufacturer's recommendations.

0702 MECHANICAL DESIGN AND INSTALL**1 GENERAL****1.1 AIR CONDITIONING****General**

Requirement: Provide room air conditioning systems conforming to the following:

- Maximum noise levels in occupied spaces: NR 30.
- Maximum noise level at site boundary: To the *Environmental Protection (Noise) Regulation 1997*.

Paint finish: Paint ductwork, pipe work and equipment exposed to view and weather.

Structural

Equipment weight: Submit weight of item of equipment.

Concrete work

Requirement: Provide concrete plinths as documented.

Plumbing

Requirement: Provide external floor wastes and drain points as documented.

Air conditioning equipment

Wall and ceiling mounted split system units: Provide units conforming to the following:

- Refrigerant: R407C or R410A.
- Factory assembled, pre-piped, pre-wired and tested ready for installation on site.
- Providing not less than the documented capacities.
- AS/NZS 3823.1.1.

Cabinets: Aluminium, powder coated steel or moulded ABS plastic with metallic-coated steel or stainless steel fasteners. Insulate and vapour seal cabinet and drain trays to prevent external condensation under all operating conditions. Provide drain holes to prevent moisture accumulation within the unit.

Discharge air grilles: Plastic grilles and side panels or moulded PVC-U/fibreglass/plastic fascia with multi-directional grilles.

Coils: Copper tube with aluminium plate fins.

Outdoor coils within 5 km of marine environment: Provide proprietary coil corrosion protection coating.

Reverse cycle units: Provide effective outdoor coil defrost facility that prevents room temperature dropping more than 2°C during defrost.

Refrigeration system: Provide compressor overload or over current relays, high pressure safety switches, discharge gas thermostat, crankcase heater and built-in thermostat.

Condenser fan: Plastic or aluminium, propeller or axial flow, dynamically balanced, with a direct drive IP55 rated electric motor.

Service access panels: Provide easily accessed panels for servicing of all electrical components, compressor, outdoor fans and condenser coil.

Installation

Outdoor equipment: Provide clearance around units for air flow and maintenance access. Make sure discharge air does not short-circuit to intake.

Outdoor units: Provide 50 mm hot-dipped galvanized steel support frames, securely fixed to the wall.

Drains: Provide insulated and trapped condensate drains to AS/NZS 3666.1, at least DN 20 Class 9 PVC-U, from each indoor coil and safety tray and from each reverse cycle outdoor coil unless casing freely drains to a roof or other location where condensate will not cause damage or pond

Refrigerant piping

Pipes: To AS/NZS 1571.

Pipe insulation: Insulate all refrigeration and drain piping sweat and to BCA. Protect insulation from sunlight and mechanical damage. Vapour seal all joints and at connections to equipment.

Cleaning evacuation and testing: To AS/NZS 1677.2 and the recommendations of SAA HB 40.2.

Electrical

Power supply: Provide power supply, complete with individual circuit breakers for each unit, terminating in coiled cables adjacent to each indoor unit. Make sure there is sufficient power for testing and commissioning of equipment.

Conduits and cabling: Provide cabling in conduits or cable ducts between refrigeration and associated equipment, including thermostats and control switches.

Supply source: All electrical equipment, wiring and fittings to be from the same manufacture throughout the installation, where possible.

Electromagnetic compatibility: Prevent electromagnetic interference. Conform to the AS/NZS 61000 series.

Controls

Type: Electric/electronic type supplied as part of the air conditioning equipment. Provide an infrared controller.

Temperature settings: Set to maintain the following space temperatures:

- Cooling mode: 24°C (dry bulb) ± 1.5°C.

Thermostats: Incorporate adjustable set points.

Vibration isolation

Requirement: Locate equipment on double deflection neoprene mounts with minimum of 90% efficiency.

Completion

Cleaning: Clean filters, outdoor coils, grilles and diffusers before the date for practical completion.

Commissioning: Commission the systems to manufacturer's recommendations using instruments calibrated within the past 12 months. Test, commission, balance and verify installation is operating correctly. Commissioning to include the following:

- Starting of motors.

- Checking correct operation of controls and protective devices. Make sure controls function correctly and are calibrated to suit the environment.
- Checking belt tensions, drive alignments and safety guards.
- Checking lubrication arrangements.
- Making sure air filters are clean.
- Testing and balancing of systems.

Operation maintenance: Provide twelve months maintenance, including at least four maintenance inspections, carried out at regular intervals during the maintenance period.

Submissions: Submit the following:

- Signed commissioning check list before the date for practical completion.
- As installed drawings: For plant and controls.
- Manual: With system description, operation and maintenance requirements and technical data on all parts.

Warranty

Requirement: Provide warranty for replacement of equipment and components, including electrical items, for a period of twelve months after practical completion.

1.2 EVAPORATIVE COOLING

Performance and sizing

Standard To AS 2913.

Performance: Supply air to each room at not less than 30 air changes per hour.

Air outlet grilles: Provide to the following rooms:

- Kitchen.
- Bedrooms.
- Lounge/dining area.
- Family room.

Externally mounted units

Housing: Manufactured from material resistant to deterioration caused by exposure solar radiation. Colour to match roof.

Wind and rain: Conform to AS/NZS 1170.2 for wind action. Design to prevent entry of rain to the supply air dropper under all likely conditions.

Support frame: Provide hot-dipped galvanized steel support frame below the unit.

Evaporating media:

- Minimum saturation effectiveness: 80%.
- Maximum pad face velocity: 2.9 m/s.
- Provide even water distribution over each pad.

Evaporator media framing: Provide a non-ferrous frame for each pad. Provide access to the unit by removing the frame from the unit without removing the pad from the frame.

Water system

Water sump: Plastic sump with clean, smooth internal surfaces free of gussets and stiffeners to allow easy cleaning.

Float valve:

- Control the level of water in the sump so that it does not overflow into the dropper.
- Construction: Brass body and internal components fitted with a float and float arm.

Recirculating pump: Install in the sump with mesh inlet screen to prevent the ingress of foreign objects which may cause the pump to function incorrectly.

Water distribution: Allow for piping to deliver water to the top of each evaporative media with provisions for flushing and cleaning during maintenance.

Bleed off system:

- Type: Provide constant bleed off of waste water using one of the following systems:
 - Adjustable tray type: That catches water from the bottom of the evaporative media.
 - Tee piece: With an orifice in the water distribution system that delivers bleed to the waste pipe.
- Orifice in flow path: To be sized so that a sphere greater than 10 mm diameter, or a flake of evaporative greater than 10 x 20 mm, cannot pass.
- Setting controls: Adjustable from inside the unit, setting to be secured so that it cannot change without deliberate intervention during servicing.

Dump valve: To be controlled so that the water is removed at adjustable intervals from 2 to 5 hours during pump operation and removed from the sump when the fan is switched off.

- Normal position: Open valve.
- Dump valve actuator: To be powered by a pilot water supply from the water supply piping. The pilot water is to be controlled by a long voltage solenoid.

Fans

Type: Centrifugal or axial flow.

Centrifugal flow fans:

- General: To draw air from both ends and be fitted with sealed bearings rated to suit the system.
- Motor shaft mounted drive pulleys: To be metal and not plastic. Drive pulleys to be keyed and grub screwed to the shaft.
- Motor mounting: High in the unit on adjustable mountings, allowing easy adjustment of vee belt tension. Once correctly positioned, securely hold the motor in place and maintain the belt tension.
- Motor thermal overload protection: Self-resetting and to be tropical proofed.

Axial flow fans:

- Fan blades: To be fixed pitch, not adjustable after assembly of the unit, and dynamically balanced before installation in the unit.
- Motors: To be fitted with a sealed top plate that stops the ingress of water droplets from above.
- Motor thermal overload protection: Self-resetting and to be tropical proofed.

Motors mounted below the fan blades: To have minimum rating of IP21 to AS 60529.

- Shafts: To have a slinger to sling water droplets off the shaft to prevent water droplets from entering the top of the motor adjacent to the shaft seal.

Motors mounted above the fan blades: To have minimum rating of IP23 to AS 60529.

Weather damper

General: To be counter weighted to close when the fan is not running.

Electrical and control components

In external units: To be housed in an enclosure mounted high enough in the unit so that water does not cause damage to the components.

Dropper

Material: To be manufactured from sheet metal with minimum thickness of 0.6 mm.

Form: To be pressed with returns at both ends so that a rigid rectangular shape is maintained.

Acoustic insulation: For at least the first 300 mm from the top.

Flashing

Requirement: Provide where the installation penetrates the wall or roof enclosure to prevent leakage of air or water through the penetration.

Tiled roofs: To be lead sheet with minimum mass of 15 kg/m².

Profiled sheet metal roofs: Prefinished/coated steel sheeting. Colour to match the roof.

Other roof types: To be of materials which prevents electrolytic action between the flashing and roofing.

Ducting

Standards: To AS 4254.1 and AS 4254.2.

Grilles

General: With louvres to direct airflow, in each grille, in minimum 4 approximately horizontal directions simultaneously.

Controls

Control panels: Provide minimum one control panel within each residence, allowing the following operation modes:

- Ventilation only.
- Cooling.

Fan speed: Provide 3 speeds.

Electrical connection

Standard: To AS/NZS 3000.

Requirement: The electrical installation is to include the following:

- Circuit breaker: Provide a dedicated circuit breaker in the residence electrical load centre.
- Cabling: Within the residence and to the externally mounted unit. Do not run electrical cables exposed surfaces of walls in conduits.
- Accessible electrical isolator switch: To be adjacent to externally mounted units.

Water connection

Piping: Conform to the following:

- Material: Copper.
- Pipe location: Run piping within ceiling spaces, do not run piping over roofs.
- Washing out of external units: Provide wash down tap with a DN 20 screwed outlet.

Isolation valves: Install in the supply piping to external units so that the water supply can be isolated. Mount at 1800 mm above ground level.

Waste piping

General: Run piping from the unit, inside the ceiling space, and down the outside of a wall to the ground level outside the residence.

Drain piping: Minimum of 40 mm nominal diameter.

Minimum fall (Vertical:Horizontal): 3:100, falling away from the external unit.

Incidental repairs

General: Repair any surfaces that were damaged during the installation, including roofing, gutters, flooring, and ceilings.

Commissioning

Requirement: At completion, commission each installation to make sure it is functioning correctly.

0802 HYDRAULIC DESIGN AND INSTALL**3 EXECUTION****3.3 COLD AND HEATED WATER****Water heaters**

Labelling: Engrave 'GOVERNMENT REGIONAL OFFICERS' HOUSING' in 12 mm high lettering, at the top right hand side of the rear panel.

Solar and heat pump systems

Solar water heater booster switch, electrical booster element: Single phase with thermostatic and manual control, one shot booster switch as recommended by the water heater manufacturer.

- Switch location: Adjacent to the load centre. Provide flush plate permanently marked 'WATER HEATER'.

3.9 GAS**Gas room heater and outlet**

Heater connection: Flexible hose connection to a gas bayonet fitting. Gas outlet location to suit reticulation and wall and ceiling vent requirements.

Convection room heater capacity: Minimum 21 MJ.

Labelling: Engrave 'GOVERNMENT REGIONAL OFFICERS' HOUSING' in 12 mm high lettering, at the top right hand side of the rear panel.

Controls: Top mounted with piezo or electronic ignition.

Gas outlets: Provide as follows:

- Type: Recessed, flush fitting, wall mounted, and chromium plated bayonet outlets.
- Gas flued heater: Where required, provide a gas point inside a No. 1 valve box, in the ground, outside the building, adjacent to the heater.
- Valve: Quarter turn valve capped to the network utility operator's requirement at the outlet for future connection.

Valve box lid: To AS/NZS 5601.1, finished flush with ground level or the top of concrete or paving.

Above ground gas points: To be 130 mm above floor level and 100 mm (centreline) to the right of flued heater.

Recessing of gas points: Install in an electrical plaster wall box with a blank plate. Gas supply to be blanketed off, back plated and elbow fixed in the recess.

Gas lines chased into walls: To be vertical and within 1 m from the floor.

0902 ELECTRICAL DESIGN AND INSTALL**3 EXECUTION****3.1 GENERAL****Luminaires**

Downlight luminaire: Recessed, fully enclosed downlight luminaire with white ceiling trim.

- Body: Powder coat finished zinc-coated steel body with porcelain ES lamp holder, teflon cable and terminal block.
- Lamp: 100 W GLS incandescent lamp. Bottom of lamp to finish flush with luminaire trim.
- Ceiling cut-out: Maximum 140 mm diameter.

Appliances

Rangehood: Provide the following to each rangehood:

- A single GPO for the connection of electric cooktop.

Telecommunications

Telephone outlets:

- Outlet 1, telephone assembly: White, wall mounted unit in the kitchen, fitted at 1.5 m above the finished floor level consisting of telephone outlet, cover plate, concealed minimum 20 mm diameter white PVC-U conduit from wall box to 150 mm above ceiling and a connection point at or near the front site boundary.
- Outlet 2, for computer internet access: Locate as documented.

Labelling

Electrical water heater: Engrave 'GOVERNMENT REGIONAL OFFICERS' HOUSING' in 12 mm high lettering, at the top right hand side.

Electric room heater: Electrical water heater: Engrave 'GOVERNMENT REGIONAL OFFICERS' HOUSING' in 12 mm high lettering, at the top right hand side of the rear panel.